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**REDUCING WEIGHT
COMFORTABLY**

THE DIETETIC TREATMENT OF OBESITY

REDUCING WEIGHT COMFORTABLY

THE DIETETIC TREATMENT
OF OBESITY

BY
PROF. GUSTAV GAERTNER, M.D.
VIENNA

AUTHORIZED TRANSLATION IN ENGLISH



PHILADELPHIA & LONDON
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PREFACE

ON the day on which I write these lines I have commenced my two thousandth obesity treatment. I have satisfactorily completed sixteen or seventeen hundred such treatments, or, in other words, I have in each case dismissed my patient at the end of the treatment, having effected the reduction in weight which at the beginning of the treatment I pronounced desirable.

Almost without exception the patients undergo the treatment at home. They pursue their usual tasks, undisturbed even though these are such as to make unusual demands upon the intellect and the "nerves." As proof of this I may cite the fact that many physicians have followed my directions for months with complete success and without any interruption of their difficult and trying professional duties.

My results will bear comparison with those recorded in the literature of the sub-

PREFACE

ject; in various directions will even surpass them.

Let me say in advance that I am undertaking neither a historic presentation of the subject nor a criticism of other methods of treatment. I propose to limit myself to a description of the methods by which I have succeeded in reducing the weight of people living under the most different conditions—men, women, and children, sick and well—by the amount deemed advisable: in some cases only two or three kilogrammes, in others as much as forty kilogrammes.

The method which I now use, although improved in details, as the result of constantly-increasing experience, is essentially the same as that which I have employed since 1903.

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J. Underwood Hall

REDUCING WEIGHT COMFORTABLY

THE DIETETIC TREATMENT OF OBESITY

CHAPTER I

THE therapy of obesity has occupied me for a long time. As many of my readers may know, in 1887 I invented and described the ergostat, a machine which has served primarily to combat corpulence. My efforts met with much approval at that time, and the ergostat quickly won a wide-spread popularity. Much of what I then proposed is of interest even to-day, although, as will be shown later, the practical deductions which I drew from the facts differed almost completely from those which I then accepted as correct.

The ergostat was to offer city residents who can neither split wood nor thresh grain nor take mountain trips every day the possibility of a graduated muscular exercise, which would be sufficiently "concentrated" and of the sort which every one could easily carry out.

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A braked-wheel is turned by means of a crank. The shifting of a movable weight regulates the difficulty of the work; that is to say, it graduates the number of kilogrammetres (units of work) accomplished at each revolution. An indicator registers the number of revolutions. The exact amount of work assigned can be accomplished by the ergostat. The physician can prescribe for his patient the amount of work which he thinks suitable.

The ergostat is employed in physiological laboratories and clinics, when it is a question of studying the influence of a certain amount of muscular work upon tissue change, respiration, circulation, etc. I know a gentleman who for over a score of years has turned the ergostat with wonderful perseverance every day on which he could perform no other physical exercise, and who attributes his good health and his normal figure in no small measure to his habit. But this man is a rare exception.

Experience has taught me, and certainly all who have been occupied with the subject, that the opinion expressed by Bunge concerning the exclusive fit-

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ness of muscular exercise for the reduction of superfluous fat is not correct. I would even go so far as to express the opinion that among the different means of effecting a reduction of obesity muscular exercise is the least promising. Not that there is anything hazy in the physiological principles regulating the increase of tissue-change by means of exercise! On the contrary, nothing is more certain than this part of the theory of tissue-change and of nutrition. The obstacle is to be found in the nature of our patients.

I have often succeeded in converting a glutton to moderation and in weaning alcohol-drinkers and tobacco-smokers from their habits. Yet my arts of persuasion have never succeeded in curing a lazy man of his inactivity, nor in stimulating him to take up regular physical exercise in any form whatever. To be sure, this is successful for a few weeks in a health resort where walks lasting many hours must be taken by *all* the patients, and where nothing else, or at least nothing more important, can be found to do. As soon as the invalid is

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home again, however, he relapses into the old inactivity beyond recall.

The man without experience is very apt to over-estimate (quantitatively) the influence of muscular exercise upon tissue-change. Very frequently I hear complaints about the injustice of the fate which puts fat on its victim although he takes a daily walk or is kept much on his feet by his calling.

One gramme of fat when transformed into work produces almost 4000 kilogrammetres, and would hence be sufficient to do the work which is necessary to lift a man weighing 80 Kg. 50 metres high. Now the motor which represents the muscular apparatus of man works with a mechanical efficiency of about 30 per cent. Therefore about three grammes of fat are required in the work mentioned. According to Rubner, a man weighing 70 Kg. in walking one hour on level ground over a distance of 3500 metres, consumes 12.8 Gm. of fat more than when at rest; in climbing 150 metres (high) over a distance of 3500 metres, 20.2 Gm. of fat more. These figures plainly teach us that by ambulatory exercise alone eight

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hours of walking on a level or five hours of mountain climbing would be required for the removal of 100 Gm. of fat or about 140 Gm. of fatty tissue in a day.

There are many permissible ways of removing superfluous fat. None of them makes so great demand on the will power and endurance of the patient as the ones which require the exclusive use of increased muscular work to attain their end.

This consideration caused me to try the other means, too. First, I did what is customary in such cases: I recommended my patients to visit a health resort or a sanatorium in which obesity treatments are given. There, if all went well, they lost in the course of three to five weeks, under the combined effect of all "methods of treatment," two to five kilogrammes. There were even some whose decrease in weight could only be expressed in fractions of a kilogramme, and those who showed no decrease at all, although they alleged that they had followed "everything" faithfully. Even the "successful" cases had given rise to a familiar and disappointing observation. Hardly

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had they left the limits of the health resort when the weight of the body, which had been forced down by deprivations and tortures, began to rise again. Within a few weeks the old level was reached. If the disposition to put on fat had not changed, then, very likely, the weight became greater than before, and the indication to seek the health resort again became more urgent with each successive year. Who does not know of people who with unrelenting determination have visited a health resort every year for decades in order to lose weight, and in spite of that have accumulated enormous burdens of fat? Some years ago I saw a gentleman who had already celebrated a jubilee of his visit and who then weighed 192 Kg.

Nothing is further from my mind than to reproach the physicians practising in the health resorts or to criticize the treatments usual in the health resorts. I only wish to agree with those who do not consider it proper to treat a sickness of an obstinate nature and inclined to relapses by an intermittent treatment which is limited to a few weeks every year and

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which is even then relatively insufficient. For there can be no doubt that not enough has been done when a man weighing 50 Kg. above the normal weight is only temporarily relieved of five or six kilogrammes.

As so often in life, a single case of necessity led me to give up the old model and to set out in new paths.

A distinguished young actress whose rôle demanded dancing and singing, at times even singing while dancing, was afflicted with the unhappy disposition to obesity.

One day—it was in 1902—she implored my aid. She said that she was no longer able to practise her calling, and had already tried every means of becoming lighter and more active. Without success! An interruption of her professional duties was impossible for reasons not necessary to mention. *Hic Rhodus, hic salta!*

I myself was at that time a suitable subject for an obesity treatment. Therefore I experimented for some weeks on myself and found that my expectations proved right: that the treatment advanced while I perceived no deprivations and

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remained in excellent health. Then I plucked up courage to call upon the artist to become No. 2 of my experimental subjects. With characteristic enthusiasm she agreed, and stood it bravely for weeks and months. Then we were delighted to see how kilogramme after kilogramme vanished and how the earlier activity returned again. This established for me the possibility of conducting a treatment of obesity up to the desired result without disturbing the patient even for a single day in an occupation taxing alike physical and mental powers.

CHAPTER II

IN the organic world we find widespread a wonderful arrangement. In times of surplus nutrition stations are created which help out in times of need. In the plant kingdom these stores consist chiefly of carbohydrates (starch and sugar) and of fat; in the animal kingdom, almost exclusively of fat.

Like many of our domestic animals, man is also easily fattened; that is, a surplus of nutriment which has been consumed is accumulated in the form of drops of fat in a tissue of its own—the fatty tissue under the skin—but also in other places, as in the diaphragm, the pericardium, and the liver.

It is no longer doubted that the three chief groups which compose our nutriment—carbohydrates, fats, and albuminous bodies—are able to bring about the formation of fat. The experience of those who fatten animals teaches this just as convincingly as do numerous tissue-change experiments in the case of men and animals.

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But the physiological significance of the fat deposited in the fatty tissue we learn from wild animals. They put on fat in summer and consume their fat in winter. Many hibernating species who go for months without nourishment can provide meanwhile by the oxidation of their fat for the necessities of tissue-change, which, it is true, are somewhat reduced. We fatten our domestic animals—swine and geese in order to gain for ourselves valuable fat, or (beef, sheep, chicken) in order to make their muscles, which are infiltrated with fat, more palatable and of greater volume.

A certain degree of fatty element is very advantageous for man himself. A man extremely deficient in fat can not be considered altogether normal. The external appearance is unfavorably influenced by a too small degree of fat, especially in women and children. The skin, particularly that of the face, allows the bones and muscles lying beneath to protrude too much, and is lacking in lustre and elasticity. This is much less to be feared in men. So long as the muscu-

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lar system is well developed the fat may be reduced to a small quantity.

Beauty of face does not suffer thereby, still less that of body and limbs. A man's countenance should show well-defined lines which are not rounded off and obliterated, and the contour of every muscle, of every bony prominence, and of many sinews should be plainly visible under a thin skin on the body and at the extremities. Excessive poverty in fat itself, however, distorts the face of an otherwise healthy man to that of an old man. We see this in jockeys, who, because of their occupation, must sacrifice the last pound of their fat in training. *But a disfiguring influence of reduction is only to be feared when the fatty content of the body sinks below the normal, not, however, in a treatment which is kept within reasonable bounds.*

However, the most important function of fat is this: it is an iron store of nutriment, which is consumed in time of want and which suffices, as we learn from many chance observations and experiments carried out by "hunger artists," to sustain in action all the vital functions and

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thereby life itself for several weeks. (The organism can dispense with water only for a few days without collapsing.)

Since the time of railroads and the development of a marine commerce, Europe, as well as all other human settlements which are involved in the dense world trade, has been spared actual famine. Yet in India and China millions of men die of hunger when the crops fail. There is no doubt that fat men survive a famine better than lean ones. As has been mentioned, at least at present there is no question of a famine for us, although even in this country single individuals die of hunger.

However, it occurs altogether too frequently that sickness hinders an individual in taking or assimilating food, entirely or in part. Then circumstances develop which correspond to the real hunger condition. If the illness is accompanied by fever, we are confronted by the fatal combination of an increased demand and a decreased or almost entirely arrested supply of nutriment and fuel. A hungry man who is at the same time in a fever

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consumes his fat faster than a healthy hunger artist.

Now, each one of us is exposed to this "hunger danger," and it is just as clear theoretically, as it has been shown through observation, that a man equipped with a normal cushion of fat can survive such "consuming" diseases more easily than an excessively lean one.

Still another function is to be attributed to the cushion of fat. As a poor conductor of heat it protects the body like the clothing in times of cold, and under these circumstances facilitates the regulation of heat and the maintenance of a constant body temperature. The huge layers of fat of the mammals and birds living in the waters of the polar regions have this task to fulfil. Since the water in which these animals live draws much more heat from the body than the air does, and since, moreover, the temperature of this water often reaches down close to the freezing point, a truly enormous demand for nutriment and fuel would be imperative to keep these organisms continually at a temperature which is so very different

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from that of the surrounding medium.¹

An example of the loss of this function is to be found at times in cases of radical obesity treatments in winter. If there is a decrease of five or more centimetres in the fatty layer of the body and also a considerable decrease at the extremities, then certain invalids are wont to complain about feeling the cold when the temperature is low. It is almost the same condition which occurs when their clothing, or at least a layer of their covering, is removed.

Since man, fortunately, does not live in the waters of the polar sea, and, moreover, since he can protect himself from excessive losses of heat by suitably-chosen clothing and by the heating of his dwelling rooms, the presence of a thick layer of fat is of no use to him as a heat insulator. The advantage which it would give in winter would be outweighed by the

¹The food requirement of mammals living in cold water is always enormous, in spite of the heat-insulating layers of fat. The walrus, whose weight is about equal to that of the ox, consumes in 24 hours no less than 50 Kg. of fish. I take this statement from C. Hagenbeck's "Guide through Stellingen." The stimulating effect of the cold bath on tissue-change, of which more explicit mention will be made in a later chapter, is in this way most excellently illustrated.

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disadvantage which it would cause its wearer here in summer and in hot climates at all seasons. Rubner has pointed out that heat regulation is rendered much more difficult for obese people in warm, damp air, from which they receive manifold disagreeable consequences.

In organisms which periodically take on fat in time of excess nutriment, the oxidation of this store in time of want of nutriment is a normal, physiological process. We would doubtless disturb the health of these animals were we to keep them permanently fat by removing the lack of food in winter.

It is a well-known fact that domestic animals which are hard to fatten (swine, geese) have, while being fattened, much more delicate health—indeed, must be considered positively sick. We do not try to fatten these and other animals for the purpose of prolonging their life.

As has already been said, man belongs to the organisms who can take on fat with abundant nutriment. Aside from the "iron store" which is to be kept permanently and which we should attempt to restore by a fattening treatment when it fails, *a supply of fat beyond this*

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measure should be at most merely temporary, but never permanent.

It is observed that season workers put on fat and increase in weight at the time of their occupation, and become lean when their work is scarce, chiefly in winter. On the other hand, we see members of those classes of society who eat their fill at every season become fatter in winter at the time of the flood of our social affairs, the chief object of which seems to be either to fatten the guests by delicately compounded meals or to destroy their stomachs and sleep. If these men, as often occurs, eat and drink less abundantly and take more exercise (or at least go walking) in summer, then they can consume their winter fat again. Their weight sinks back to the old measure. This state, *the oscillating weight*, can be considered permissible so long as it is kept within definite, narrow bounds. *However, the ideal condition of a man who does not have to fear famine is the constant weight.* It happens far too easily that once or several times the compensating decrease does not occur, and then the effects of the fattening periods total up to

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threatening values. Much worse are those who fatten themselves without any interruption or alternation 365 days in the common and 366 days in leap year.

To take on 10 Gm. in weight in a day does not matter much. In a year, however, this has become 3.65 Kg., and in 10 years 36.5 Kg. Each one of us know men who have stored up by such consistent economy 70 and more kilogrammes over the permitted measure.

In other cases the patients report to us that the tendency to take on fat has been present for a long time; that their weight has grown steadily but *slowly*; then, however, beginning at a certain time, the rate of increase has hastened rapidly. Cases in which the patient gains 20 Kg. and more in a year are not uncommon. In women what brings about the rapid increase is generally pregnancy—this itself or the following lactation; but, to go deeper, the unreasonable method of diet (beer in immense quantities as a drink!) which is demanded at this time by almost ineradicable prejudices. The appearance of the climacteric, as we shall see later, is likewise not seldom accompanied by rapid

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rise in weight. In men the rapid addition of fat can often be dated from their marriage. A quieter and even life and more abundant nutriment with "favorite dishes" are the probable causes of this frequent phenomenon.

Every addition of fat which exceeds the iron store ought to be temporary. Its continuous existence is the cause of disadvantages and even dangers. *Obese people should know and always keep before their eyes the fact that the removal of fat is a normal, physiological process, the integrant second half of the accumulation of energy, which has been arranged so suitably by Nature.* The stored-up, superfluous fat must be consumed again, and not always increased, if the organism is not to collapse and choke under the burden (taken also in the literal sense).

When the lean times, for which the fat is designed, do not come of themselves, they must be artificially produced. When, however, the fat is once removed, we should aim to keep the body weight continually at the same height. Neither the climate nor the other conditions of life under which by far the greater part of

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civilized mankind lives makes it desirable, or even permissible, that we put on and take off fat alternately. *However, if we have put on fat, we must take into the bargain the removal of fat.*

Like all other physiological processes, the oxidation of superfluous fat is connected neither with dangers nor disadvantages to the organism. Assertions and apprehensions to the contrary are without foundation. This holds not only for the man whom we characterize as healthy,—that is, one who exhibits no disturbances of the important functions recognized by himself or the physician; this holds also, with few exceptions, for the invalid; above all, for the cardiac case.

CHAPTER III

IN this, as in many other points, my experience coincides with that of Von Noorden, who not merely declares it permissible to reduce the flesh of cardiac cases, but who has found, on the contrary, that no greater and more important service can be shown to an obese sufferer from heart-disease than to relieve him of his burden of fat. The stout cardiac case suffers much more from his great weight than does the healthy man.

The work to be accomplished by the heart is determined by many factors. One of the most important of these is providing the muscular system with blood. The blood requirement is entirely different, according as the muscular system rests, so far as this is possible (the respiratory muscles and the cardiac muscle never rest), or as it accomplishes work. In the latter case the demand is considerably greater, and, what is more, grows with the amount of work which the muscles perform. We often see cardiac cases who feel tolerably well so long as they are

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lying in bed or sitting quietly; that is, so long as the muscular system of their bodies continues in almost complete inactivity. As soon as they attempt to make the movements necessary in walking, phenomena of cardiac insufficiency appear, phenomena which indicate that the heart is no longer equal to its task. Walking has increased the demands on the heart. In other and, fortunately, more frequent cases these patients can even cover long level stretches without being conscious of their ailment. Cardiac insufficiency, however, appears when they begin to mount stairs or elevations. In doing this, besides accomplishing the work which the horizontal forward movement necessitates, they must also raise the weight of their bodies. The heart is no longer equal to this greater task.

Moreover, the working capacity of the healthy heart may not be exceeded with impunity. A very considerable part of the professional athletes finally become victims of cardiac diseases.

The amount of work which the heart does stands in direct relation to the body weight. The greater the body weight,

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the greater the burden which the body muscles are obliged to lift and to move. The more the muscles are taxed, the more work the heart has to do in order to keep pace with the great demands of the increased blood supply. Relatively a much greater amount of blood flows through the working muscle than through the muscle at rest. When many and large muscles are brought into action, the path of the blood is enormously extended, and the heart must set in motion a much greater quantity of blood in the unit of time than when the muscular system is at rest.

If labor is not excessive, and for those who have been trained for the particular kind of work, the blood-pressure, as my own observations have taught me, remains unchanged. The amount of work done by the heart must accordingly increase in proportion to the rise of circulatory activity. Every additional kilogramme which is loaded upon the muscular system is felt by the heart. Regard for the heart determines the load which the soldier bears. He is made to carry as great a burden of weapons, ammunition, etc., as his heart (*i.e.*, the average

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heart of a young man) can stand without danger. However, when he is about to be called upon to endure long marches or other unusual exertions, he is made to lay aside everything in his equipment which is not absolutely indispensable.

The obese man is in the position of a soldier who is unreasonably burdened. In general it is of no consequence for the muscles of the legs and the body and likewise the heart whether the burden is situated under the skin or outside of the skin. As a matter of fact, however, the burden bearer or the soldier with his load is better off than the obese man.

It has been ascertained by much consideration and testing how and where the burden disturbs least. In this way it has been found that free respiration is to be sought above all. The respiratory movements must not be hindered. Now, fat has the tendency to collect in especially large quantities in the abdominal walls and in the abdominal cavity (mesentery). But there it hinders respiration by offering the resistance of the abdominal protrusion of the stomach to the descent of the diaphragm. Certainly none will ever

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think of fastening a load to be borne where fat usually accumulates first and in especially large amount. Shortness of breath is one of the most tormenting symptoms of obesity. At first it is only noticed during straining exertions, later during every movement, and, finally, when the body is at rest.

Especially tormenting is dyspnœa, which appears in many of our patients as soon as they attempt to lie down, and which forces them to pass their nights in a sitting or half-reclining position.

Cardiac cases are often obliged to contend with dyspnœa because of their main complaint. Likewise obesity produces dyspnœa. The two influences total up in the stout cardiac case, and the air-hunger can reach an unendurable degree. Finally, only when absolutely quiet and in a sitting position do the poor victims find air sufficient to maintain their lives, which are indeed not worth living.

One of the two intercurrent diseases is generally incurable. To be sure, we can improve the condition of a cardiac patient materially by regimen and medication; we can impede, or for a time completely

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prevent, the functional disturbances by furthering compensation; but we are not in a position to repair a valve which does not close nor to widen a narrowed orifice in the heart.

However, the other one of the two diseases is *curable*, and it is one of the most grateful tasks of the physician to heal, or at least to alleviate, it. Every kilogramme of fat removed signifies an unloading of the distressed heart, a relief to breathing, an increase of the possibility of motion, a prolongation of life.

The opinion is wide-spread in medical and lay circles that men afflicted with organic heart ailments ought not to be subjected to treatment for obesity. My experience, and, as already mentioned, also that of Von Noorden, goes to show that in this particular case the treatment is urgently needed. The diagnosis of a heart lesion causes me then to recommend the treatment urgently to the sufferer.

Let it be confessed, however, that in diseases of the myocardium, and especially in disturbances of innervation, special caution should be exercised; the more so in order that relapses or unfavorable conditions, which in such cases easily

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occur even without ascertainable cause, may not be charged to the treatment. The inclination to construe such "causal" connections—to make a *propter hoc* out of a *post hoc*—exists in many men. I myself could report "accidents the result of obesity treatments" which have very great similarity with the case of a death following salvarsan, which, according to newspaper accounts, occurred recently in Russia. It was revealed, upon closer examination of the case, that the man received an injection of quicksilver, not salvarsan, and that he did not die *from that*, but was strangled by the hand of a murderer.

It was a pardonable artifice of our physician ancestors to assert that it is dangerous to life to heal this and that disease, which, as a matter of fact, they did not understand how to heal. With the advances of therapy the number of *noli me tangere* diseases, to which belonged not long ago, among others, fistula of the rectum, chronic eczema, and plica polonica, is decreasing steadily. Even obesity will be stricken from this list when physicians and laity are conversant with its curability.

CHAPTER IV

IT happens by no means seldom that my patients for some reason consult a second physician during the treatment, and that they then come again and tell me in a reproachful tone that my colleague has found that they are "under-nourished." They, and supposedly, also, many physicians, connect this word with the conception of a very critical condition, which requires at least immediate interruption of the treatment, if possible even the introduction of a fattening treatment. The establishment of a diagnosis of under-nourishment was made in many cases, not by complicated examinations of tissue-change, etc., but by simple medical examination—inspection, auscultation, and percussion. In the great majority of cases a moderate pallor¹ was the only *symptom* that could have warranted the diagnosis of "*undernourishment*."

¹ Pallor is actually observed in obesity treatments in about one-quarter of all cases. It disappears on the day on which the patients complete the treatment and resume the normal diet. According to my experience, no significance is to be attached to this.

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Now, it is absolutely necessary for every man who submits to an obesity treatment, and for every physician who carries it out, to know that undernourishment and obesity treatment are almost identical conceptions, two expressions which mean almost the same thing.

As we will see directly, there are different ways which lead to reduction of weight, but without undernourishment it will never be accomplished. An obesity cure depends *without exception* upon less nourishment being given a man for a time than he requires for conversion into energy. In this way the organism is compelled to make up what is lacking from the fat which is stored up. The completion, however, must be at the expense of the fat only, not of the albuminous content, and of the muscular system. We will return to this point later.

Theoretically considered, there are two means of creating a negative balance of tissue-change:

- (1) Increase of output.
- (2) Decrease of income.

In practice, however, it is often difficult to determine how to combine the two.

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In the first chapter I admitted that I had given up the exclusive use of muscular exercise with its accompanying increase of tissue-change. If the amount of nourishment is left to the discretion of the invalid, one is disappointed with the results. As is well known, all muscular exertion increases the feeling of hunger. The invalid increases the amount of his nutriment with astonishing certainty at least up to the point necessary for the maintenance of his status. Every physician with some experience has heard the complaints of patients who quarrel with their fate: "I take gymnastic exercise daily, play tennis, go walking or riding, even have myself massaged, and in spite of that I do not succeed in removing even a kilogramme of my fat."

The increased feeling of hunger causes men, without suspecting it, to augment the quantity of their nutriment (especially in the form of some additional bread). By that, however, the effect of the muscular work is evened up; all their trouble was in vain. It is clear what must happen: the quantity of nutriment must not be increased; the man who exercises

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must receive no more nutriment than he did when he was resting. Yet a disappointment can be encountered in carrying out this apparently infallible principle. That is to say, if the patient, before he increases his metabolic processes by muscular work, has taken more nutriment than was necessary to combat his tissue-change, this quantity can still suffice to maintain the equilibrium if the need has been increased by muscular work.

The mode of nutrition just mentioned, *the excess diet*, is, according to my convictions (with reference to this there are other views), the rule in those classes of society from which the material for obesity treatments is drawn. Therefore, efforts to secure a reduction in weight by the increase of muscular work and the same amount of nutriment are without avail. Rare exceptions may be disregarded. Exhausting, repeated mountain rambles or daily, regular, heavy muscular exercise lasting many hours increase the tissue-change so powerfully that even the surplus diet during rest cannot cover the need. As has already been mentioned, we see also how energetic men can consume their

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winter fat in a few summer weeks. The assumption is that they must not be misled into appeasing the increased feeling of hunger by an abundant diet. They must endure a certain amount of hunger, if they wish to consume fat; they must become "undernourished."

I have found that even exhausting and repeated mountain trips undertaken from a good hotel as headquarters seldom effect a substantial decrease in weight, while the ones which are provided with a quantitatively and qualitatively insufficient store of provisions frequently bring about this result.

One thing we should always keep before our eyes: even the maximum amount of work which men are able to accomplish can easily be compensated for by nutriment. Blacksmiths, ship-loaders, and the 'riksha boys of East Asia—the latter are obliged to trot along for hours carrying a cart with a man sitting in it—do not consume their own tissues. When they find sufficient nourishment, they retain an even weight and good health.

Therefore, a fat man can never be made slender by force of work alone. Besides

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that, care must be taken that his diet is made insufficient, that the increased appetite, which the work causes, is not quite appeased.

The division of obesity treatments, proposed by Bunge and widely accepted, into "permissible, natural ones," which consist in giving the patient work to accomplish without his going hungry, and into "senseless hunger treatments" in which only his nutriment is diminished, is *false*.

Even in the natural obesity treatments we cannot get along without reducing the diet, hence without hunger. In this connection it makes no material difference whether tissue-change is diminished or increased. The patient must not eat his fill: his fill in the sense that the oxidative value of the nutriment must not be entirely sufficient for the conversion into energy. However, this theoretical conception of satiation fortunately does not coincide with that which men perceive as satiation. *Let it be remarked here that my patients, and certainly also those of other physicians of experience, suffer no hunger during the treatment.*

The physician who would carry out suc-

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cessful obesity treatments must know how to protect his patients from the feeling of hunger. By that I mean hunger *after* meals—the feeling that he has not had enough. *Before* meals every healthy man ought to feel hungry, and many have their physician to thank for acquainting them with this hitherto unknown sensation.

To be sure, most obese subjects enjoy by nature a blessed appetite. Yet we also meet some who have never allowed a feeling of real hunger to develop, but immediately answer the slightest warning of this sort by an extra meal.

But in the case of *obese drinkers* lack of appetite is of very frequent occurrence. Chronic gastric catarrh and gastric dilations, both conditions which disturb the appetite, are, as is well known, frequently results of the immoderate use of alcohol.

Explicit mention will be made later of the second kind of obesity treatment. But before that the pathological cases and their treatment must be illustrated.

It is a phenomenon familiar even to the laity that of several men of approximately the same age, the same mode of life, stature, etc., who eat the same fare, some

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put on fat while others remain lean. The same observation is made in the case of animals—at least in the direction that the effect of fattening turns out differently with the same fodder. The capacity for fattening which some species of animals have has been systematically increased by century-long continued breeding, and as a result is much more wide-spread than in men. It seems, however, that similar influences depending on artificial selection have prevailed in the case of the female sex of some Oriental races, among whom only a stout woman is considered beautiful.

Now, one might suppose that fat people consume more, quantitatively, than thin ones. This is often true; but in other cases parents who are intelligent and good observers assert that the stout child eats no more, perhaps even less, than its normal brothers or sisters.

There is no doubt that the same nutriment is differently assimilated by different individuals. Not what men swallow, but only what they digest and assimilate, can be considered nutriment in the sense of tissue-change. These functions are

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carried on differently in different men, and even in the same men they can vary from day to day under the influence of external conditions. When the nutriment is reduced under the degree necessary to maintain his equilibrium it is better assimilated than when an excess diet is the rule. Magnus Löwy found that even in constipation all materials, cellulose included, are better assimilated, and that loss through the feces sinks from 75 to 50 per cent.

The same observation can be made in every obesity treatment. The amount of the stool sinks to a fraction of the former value and more than in proportion to the reduction of the amount of the diet.

If all the nutriment exceeding the measure necessary to the maintenance of the organism in the same status were to be applied to putting on fat, then there would be many more fattened men than actually exist among healthy individuals, who are in the position freely to choose their food quantitatively and qualitatively. And if the ability to take on fat through the food did not cease at a certain weight which varies from case to case, obesity

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would be one of the most frequent causes of death in this class of society. According to my conviction (which is not generally shared), most men eat too much. I have been able to effect a substantial reduction in the diet not merely of obese men, but also of those with a normal nutritive condition, without reducing their weight. And the normal amount which I could discover experimentally for over a thousand men was evidently less than the diet which these and other men voluntarily chose.

Overeating begins even at the tenderest age. Infants easily overload their stomachs. The reduction of the amount of nutriment to the correct degree is an important task in the hygiene of this age of life. But children and adults eat as much as they can "get down" of agreeable food when it is offered in unlimited quantity.

The taking of food which serves the maintenance of the individual is accompanied in all organisms equipped with perception by pleasurable sensations. In the ages in which the second mighty impulse which brings about the preservation of the

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race was not yet developed or was already extinguished, these pleasurable sensations, the converse value of which is hunger, formed the most important arrangement in all life; but in all life one of the two most important biological arrangements whose cessation would result in the rapid extinction of the race.

The endeavor to procure the pleasurable sensations connected with the taking of food is entirely normal, physiological, and ought not to be suppressed but only directed into the right paths when it has degenerated.

These pleasurable sensations must also be reckoned with when an obesity treatment is to be carried out. Other conditions being equal, that physician who procures for his patients the greatest amount of epicurean pleasures, who imposes upon them the fewest restrictions, will secure the greatest success. His prescriptions will also be borne longer than those which demand an extensive asceticism.

In the endeavor to obtain as much as possible of the pleasurable sensations mentioned, men—we can probably say most men—eat more of an agreeable dish,

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and especially of a meal composed of a series of dishes calculated to tickle the palate, than is necessary to maintain their uniform weight. The first condition for putting on fat has been given. The second, the *disposition*, must yet be added in order that the patient may really be fattened. This disposition is present in many cases without our being able to connect it with any anatomical or functional deviation from the norm of special organs or system of organs. Men are at first merely obese, but otherwise healthy. However, with time disturbances develop, which, however, are the result, not the cause, of obesity.

However, in an extremely small fraction of those predisposed well-defined changes in the organs are found which influence tissue-change and other vital processes by internal secretion. Alfred Fröhlich has pointed out that diseases of the hypophysis can bring about extreme obesity together with deficient development of the genital system. The relations of the thyroid gland to the accumulation of fat are best known. Insufficient functioning of the thyroid gland creates a

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syndrome (clinical picture) which is known as myxœdema. An integral constituent of myxœdema is obesity. In contrast to this, in Basedow's disease, an affection referred by many authors to overfunctioning of the thyroid, we find, among other things, emaciation. These experiences and observations have probably led to the trial of thyroid preparations as a remedy for obesity. The countless anti-fat pills and tablets manufactured, especially in France, and often highly puffed up, contain thyroid preparations. But not always: there are also quite harmless cathartic pills and teas to which the inventors or publishers, without grounds, ascribe the power of effecting a reduction in weight. The manufacturers of remedies to be used externally, salves, soaps, etc., make still greater demands upon the gullibility of the purchasers.

There is no doubt that a reduction in weight can be gained by thyroid extracts. They are employed and recommended by many experienced physicians, especially for cases which do not yield to dietetic treatment.

I have not met such cases. I have been

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able to reduce my patients, without exception, by diet and other regimen alone. Thus I escaped the necessity of prescribing thyroid extracts.

But I have also learned and seen much which forces me to oppose these preparations *actively*. Very many of my patients, before they sought me, had tried, besides other remedies and methods, also thyroid extracts. The verdict which the most intelligent, including even physicians, formed about these was decidedly against them.

And still a second circumstance makes me cautious. I saw acceleration of the pulse-beat appear as the only undesired consequence of *very radical* obesity treatments. I have recorded tachycardia about fifteen times: therefore an infinitesimally small percentage. In individual cases, moreover, there were other forces present besides the treatment which could be brought into causal connection with the appearance of tachycardia. Thus the accelerated pulse appeared once as the immediate result of a great overexertion. The young lady in question pursued a fleeing dog for hours up hill and down

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dale, and this resulted in a condition of great nervous excitement. In another case several weeks after, palpitation and acceleration of the pulse appeared during an exhausting mountain trip. On account of the time which had elapsed in this case the connection with the treatment was very questionable; and still more improbable, since the lady in question had a few years before gone through a very similar attack as the result of a touring achievement which overtaxed her powers. In a third case there were present besides the acceleration of the pulse: slight exophthalmus, slight swelling of the thyroid gland, diarrhœa, therefore Basedow's disease—to be sure, in such a light degree that the diagnosis was doubtful at first. It concerned a lady forty years old who had undergone a treatment with me four years before and had lost 14 Kg., while remaining in perfect health. For two years she kept the same weight. Then she became careless and took on 11 Kg. A year ago she came again. A new treatment brilliantly successful. Decrease in weight of 10 Kg. Diarrhœa and tachycardia appeared after great annoyance

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and vexation. The treatment is at once discontinued. In spite of unrestricted diet, the weight sinks 4 Kg. The phenomena have since then greatly improved—in the meantime six months have passed—so that complete recovery is soon to be confidently expected.

It is well known that vexation and similar psychical traumata belong to the frequent causes, or at least the exciting occasions, of Basedow's disease. Therefore the case really proves nothing, except that an obesity treatment does not prevent disease from breaking out.

At any rate, it seems to me conceivable that there exists a connection between reduction of weight and hyperthyroidism. The thyroid gland and the fatty tissue certainly stand in some kind of functional relation. One might imagine, for example, that after the disappearance of 20 or 30 Kg. of fat the unchanged remainder of the thyroid gland becomes relatively too great. One might also suspect that the disappearance of fat excites a hypersecretion of the thyroid gland, and might propose still other hypotheses which seek to explain the phenomenon.

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The observation of these cases was a warning for me to omit all medication whose effect tended in this direction. Tachycardia and palpitation are not rare resultant phenomena of thyroid feedings.

Fear of harming my patients has kept me, therefore, from using thyroid preparations as reducing remedies, the more so since I always succeeded without this preparation. For me there is only one exception to the rule.²

When the patient shows, besides his obesity, still other symptoms of an insufficient functioning of the thyroid gland (myxœdema), then I seize upon this therapy with the greatest enthusiasm, the discovery and development of which belongs to the great advances of present-day medicine. Warning against the use of thyroid preparations without the supervision of a physician can not be made urgent enough. In spite of the official prohibition, which ought to prevent the sale of thyroid preparations, these are brought to us from France under the most diverse designations. They have already

² I find myself in this respect in complete agreement with Umber.

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caused many severe disturbances of the health.

Other substances also, by no means immaterial to the health, have been recommended as reducing remedies. Chronic cases of poisoning with arsenic and quicksilver are accompanied by reduction in weight. Surely it would be a case of Beelzebub driving out the devil if obesity were to be replaced by a chronic poisoning from these remedies. This consideration also leads me to reject the use of boric acid and borax, which are recommended as reducing agents.

The purgatives deserve a place of their own in this discussion. For the lay comprehension there is nothing simpler than to bring about a reduction with purgatives. Fattening arises from too much material being introduced into the receiving opening of the digestive apparatus. If, now, it could be brought about that more than usual should be discharged through the discharging opening, the excess diet would be compensated, and upon further forcing of the excretion a decrease in the size of the body, therefore probably reduction, would be obtained.

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The effect might also be proved scientifically. The remedies hasten the passage of nutriment through the intestines and thereby prevent, perhaps, good assimilation. If, however, nourishment is badly assimilated, then undernourishment, hence reduction, must make its appearance.

To be able to eat to our hearts' desire and to undo this and even earlier dietetic sins with a cathartic tea or something of the sort, that would indeed be a splendid solution of the question!

It cannot be asserted that the attention of the public, seeking help, is not sufficiently directed to this method of getting the accumulated fat from the body. Almost every one of these preparations is lauded as an infallible reducing agent, while individual ones are characterized as specially invented for this purpose.

But what is the real state of affairs? Hundreds of my patients have tried such treatments before they sought me, for weeks and months at a time. Even then a successful case could only be recorded when a suitable diet was followed at the same time. Purgative remedies alone remained without effect. A decrease in

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weight was not observed. Only during the first days a diminution in weight, depending upon the withdrawal of water, appeared. At times it seemed to the patients as though fat had disappeared in spite of that. Such statements deserve no credence. They rest upon agreeable self-deception. A reduction of fat worthy of consideration in healthy men must also be expressed in weight. Only in cardiac or kidney affections could it be concealed by the appearance or growth of œdema.

CHAPTER V

BEFORE I go on to describe the procedure I observe, I must mention some other methods which have the reputation of efficiency with the laity and also often with physicians.

The first to be mentioned is the sweat-bath. There are often detailed debates before I succeed in convincing veteran frequenters of the steam or of the Russian baths that these forms of baths, the agreeableness or other usefulness of which I do not wish to dispute, are impracticable as reducing agents.¹

The myth of the reducing property of sweat-baths can be traced to two false conclusions. Heavy physical work draws forth sweat and consumes fat. Hence the assumption probably arose that sweating is the cause of the disappearance of fat, and that, therefore, fat could be removed also by sweating not produced by work. As is well known, however, the connection

¹ Von Noorden and Umber agree with me in this respect.

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is to be explained as follows. In muscular work, chemical energy is transformed into mechanical. Mechanical energy arises from the oxidation of fat and other constituents of the body. Only a part of the transformed energy appears again as *mass movement* (propulsion of the body, dragging or raising of burdens, etc.) ; another very considerable part appears as heat. The heat produced in excess, and which is an undesired by-product, leads to a rise in the blood and body temperature of the individual working. However, the sweat-secretion is a form of automatic heat-regulation intended to bring the heightened temperature back to the normal point through evaporation.

The second false conclusion depends upon a wrongly interpreted observation. The patient has lost two kilogrammes in weight in the electric-light bath. In a single hour as much as in two weeks of a diet treatment! A pity that this decrease in weight is not permanent! Two days later, before the beginning of the next bath, the weight is recorded, and it shows that the two kilogrammes are back again. This process is repeated again and again.

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Even at the end of such a long sweat treatment a real decrease in weight based upon loss in fat cannot be found unless other influences had coöperated at the same time.

The false conclusion consists in confounding the decrease in weight with a decrease in fat. Only water is lost in the sweat-bath (aside from slight quantities of tissue-change refuse which do not come under consideration here), but no fat is sweated off. The water is again equalized in a very short time by the increased consumption, stimulated by the heightened thirst, or by means of the limitation of the excretions through nerves and skin, and, indeed, with unalterable certainty. Only when the water content of the organism is pathologically augmented, especially in *dropsy* of the subcutaneous cellular tissue and of the body cavities, can the *abstraction* of water by sweat procedures become successful in high degree—yes, even save life and bring about a permanent reduction of the body weight, increased by the excess of water. These processes have nothing in common with the reduction of obesity. It is not improbable that a sweat-

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bath, just as a hot-water bath, *restricts* the oxidative processes by storing up heat, and hence does not promote but hinders reduction.

In spite of that, there are two cases, differing according to their nature, in which a combination of obesity treatment and sweat-baths is indicated.

(1) In obese subjects, who also suffer from dropsy, the latter may be caused by disturbances of circulation or kidney disease. Often enormous decreases in weight are attained when the patient is reduced and at the same time the liquid output is increased. Here loss of water and loss of fat total up together.

(2) In men who are forced, by reason of their profession, to exhibit a certain weight on certain days and at a certain hour. These are the riders in horse races, especially jockeys, whose very existence depends upon their not exceeding at the hour of the race a certain very low weight, the weight assigned to a particular horse. Less "training" than in the case of the latter is demanded of gentlemen riders, although their chances in the race depend not in least measure upon their weight.

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Drivers and trainers of trotting horses must also not be too heavy. I once assisted a trainer indirectly to great successes, which were denied him in previous years, by reducing his weight 15 Kg.

An aviator weighing over 100 Kg. also claimed my help, because he felt that his weight was an obstacle to the practice of his sport. I have not seen him since, therefore I do not know whether he observed the treatment, still less whether he derived any benefit from it.

It is demanded of professional jockeys that they reduce their weight to improbable degrees. They are chiefly men of small stature. However, the weight at which they "ride" is in no wise proportional to the length of their bodies. Therefore their muscular system, especially that of the arms and thighs, must be very powerful. Now jockeys submit to a training which aims at reduction of weight, which has been duly sanctified by an old tradition. The procedure consists in following a certain diet, chiefly meat with little drink, and in addition in manual labor and sweating processes. The muscular work is generally an endurance

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run of great extent in very warm clothing (sweater). Thus a great deal of sweat is abstracted. On the day of the race the steam bath is sought and perspiration is promoted so far by special artifices that the body weight is forced down two kilogrammes more. This procedure is repeated every racing day, since in the meantime the weight has again risen by the amount of the sweat lost. After the race the thirst is quenched and the water equilibrium restored.

Now, I have tried to replace the torturing training by dietetic methods. I had the good fortune to find a very suitable subject. One of the best—as many assert, *the* best jockey of the Vienna course—had the courage to break with the customary way of removing the winter fat and to entrust himself to my care.

He attained his end without trouble, without deprivations and tortures. His weight sank from 64.9 Kg. (with clothes) to 57 Kg. in five weeks.

However, the steam-bath before the race, by which he removed two kilogrammes more, was still used.

This case proves that the procedure

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which I followed, as compared to the old traditional one, does not entail disadvantages which may express themselves in decreased efficiency in a calling which makes so powerful demands upon mind and body. The man might indeed have become weak or nervous. Now my jockey has, during the year in which he entrusted himself to me, excelled, as regards successful professional activity, not merely his colleagues and his earlier achievements; he has, if I am not mistaken, established a record of 99 victories in one year. He also seems to be satisfied, since he came back the next year and asked for my prescription again.

A second very "famous" jockey, who could not get rid of a surplus of 2 Kg. by the usual training, asked my advice. As I afterward learned from his owner, he was actually able to reduce his weight 1.5 Kg.

Here, also, where the result may depend upon the reduction of weight down to the attainable minimum, sweat-baths are indispensable. From the cases mentioned concerning trainers and jockeys, I found that it is possible to carry out even

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such *extreme* obesity treatments without those tortures which men and youths who practise these professions have had to undergo hitherto.

Further, massage belongs to those procedures which have a reputation for efficiency, but which are not recognized by myself and other experienced physicians. It would indeed be fine if fat could be taken off by pressing and kneading, as water is pressed out of a wet sponge. This seems plausible to the laity. Massage is and has been undertaken millions of times to reduce fat. Even among my patients there were very many who had themselves massaged for a long time. Without exception, experience contradicts its efficiency. Simple massage without the support of other remedies never brought the disappearance of fat in its train. Nor is such a thing to be expected theoretically.

The utility of another kind of massage, however, is, as a matter of course, even for me, unquestionable. I also find it indispensable as a substitute for the absent active muscular exercise, so far as this

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stimulates the circulation, also as a remedy for intestinal inertia, rheumatism, and many other morbid conditions.

There is only one strictly limited indication for massage for reducing purposes which deserves a trial.

Our patients often express the wish that the fat be removed first and most thoroughly from *special* places. In one case it is the breasts, in others the abdominal walls, the neck, the hips, the double chin, etc. In general it can be promised and predicted that the effect of treatment will make its appearance first and most generously where there is the greatest need—that is to say, where the masses of fat are greatest. The large belly in particular, when it is caused by accumulation of fat in the abdominal walls and in the mesentery, and does not depend upon relaxation of the abdominal wall and meteorism, always vanishes quickly. The fact that during the treatment the stomach and intestines are less completely filled, and that distended feeling, about which the numerous heavy eaters among our patients frequently

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complain, vanishes, exerts a supporting influence.

The wish to reduce more quickly in certain places has always seemed to me well founded in many cases, and I have endeavored to give it its due. Whether successfully I cannot say definitely, since the attempts in question date from a very recent time. I believe that my suppositions are correct. They are as follows: The importation and exportation of fat to and from the stations can only follow the path of the circulation, probably through the blood and lymph stream. Hence if we bring it about by a suitable regimen that *exportation must follow*, and then reinforce the blood current in a certain region of the body, it seems possible to me—yes, probable—that relatively more fat will be absorbed there than in other places. And there is probably no better means for stimulating the circulation than massage. When the skin itself is in question, electricity and hydriatic processes might also be considered.

Guided by this consideration, I have those regions of the body massaged which must be reduced most quickly and thor-

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oughly, and these alone (since otherwise the effect would be lessened), and I select for the sessions those hours in which presumably fat absorption ought to be the most active. These are the morning hours, before breakfast, hours which are farthest distant from an abundant meal, hours in which even in the laziest the blood supply is more active than at other times on account of muscular exercise (rising, toilet).

As has already been mentioned, I believe that massage alone is useless for reducing purposes. It is not improbable that even in the case of excess diet one might effect a *deposition* of fat in certain places by massage. The blood which carries the fat will also deposit material more easily where it is conducted in more ample quantities than in places with a scanty circulation. In this sense the massage prescribed in the Mitchell-Playfair fattening treatment is very rational. Since, however, according to my conviction, most men eat too much, their situation with respect to massage is similar to that of men who submit to a Mitchell treatment. In their case massage supports the deposition rather than the

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absorption of fat. This is corroborated by experience.

Among the remedies which have the reputation of effecting a reduction, iodine and its preparations occupy a prominent place. I have never seen a successful result which was brought about by iodine alone. News of that sort of successful cases was always inaccurate and could not be verified.

It seems that iodine through its efficiency in goitre and enlarged lymph-glands acquired the reputation of also being able to cause other organs and tissues to disappear; likewise, fat and, especially, over-large mammary glands.

It is well known that the employment of iodine can produce or arouse Basedow's disease in individual men of exceptional susceptibility, and that then emaciation sets in. This would be a bridge between iodine and emaciation. However, this possibility seems terrifying enough to me to avoid iodine as an auxiliary remedy in obesity treatments, even in its external application. Only when a direct indication for iodine medication itself exists, as

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for example in lues and in many cases of arteriosclerosis, do I consider its combination with obesity treatment permissible.

Very lately two more proposals for obesity treatments have come to light.

(1) Faradization of the muscles with the help of special apparatus for the purpose of increasing tissue-change. This process lasts an hour every day. It is said that the renunciation on the part of the patient of active muscular exercise makes the method possible even for the indolent and lazy.

This enrichment of the "means of treatment" by a new, complicated apparatus may be considered in the case of institutions. However, I do not like to require my patients to procure it, because I am sure that the increase of consumption brought about in this way, as in every other instance, will be very easily equalized by a surplus of nourishment and its therapeutic effect destroyed; further, because I consider the voluntary activity of the muscular system incomparably better than this makeshift, and because, even for educational reasons and with regard to the time after the end of the treatment, I

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exert all my influence to insert at least an hour's muscular exercise into the daily work of the patient.

(2) The proposal of Kaufmann (Halle).² Proceeding from the conviction that obesity is based upon a disturbance of oxidation (an assumption which is not proved), he injects a colloid solution of lanolin in liquid paraffin into the fat of the abdominal walls. Thus an increased activity of the oxidative processes is sought.

The injections are repeated from every fourteen days up to twice a week. After injection, fever appears. (Highest temperature observed, 40.2° C. per rectum.) When no fever occurs, the decrease in weight is lacking. An infiltrate is formed at the point of the injection.

"The best results," he says, "are attained by a combination of the metal treatment with a Marienbad diet-cure. The latter does not become superfluous because of the remedy, but it becomes even more successful in many cases." The remedy does not protect against relapses.

² Münch. med. Wochenschr., 1913, No. 10.

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The experiences given here in the form of extracts have not led me hitherto to attempt the method, for two reasons:

- (1) Because I always accomplish my purpose by diet and regimen alone; and
- (2) Because I have not yet been able to convince myself of its absolute harmlessness.

CHAPTER VI

As stated at the beginning, neither an historical nor an extensive critical discussion of the methods practised by other physicians is to be attempted in this book. I only wish to inform my readers how I manage to reduce my patients, why I proceed as I do, and, finally, why I do not use other methods.

I have noted in the previous chapters that reflection and disappointing experience have led me to employ diet as the supporting pillar of the whole structure.¹

No obesity cure without dieting. Only by dieting is success always attained.

Forced by circumstances, I have several times carried out the treatment successfully with patients confined to bed, hence with tissue-change materially reduced.

I by no means scorn the physical means already mentioned and still to be mentioned. Exercise in the open air, gymnastics, sport reasonably pursued, and

¹ All authors who have been *successful* in obesity treatments have reached the same conclusion.

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the cold bath, keep the body healthy, the mind in a happy mood. That they also promote tissue-change I welcome as a desired accompanying phenomenon. But their great significance lies in their general hygienic advantages. These lead me to recommend their use with moderation and discretion, with regard to the necessity of the individual case, to *all* asking my professional advice. So also to obese subjects. We will return to this later.

I am guided by the following principles in drawing up a regimen for my patients:

- (1) Avoid injury.
- (2) Individualize strictly.
- (3) Impose no more deprivations than are absolutely necessary.

Before I enter into details I must make an important confession. I have proceeded empirically and have not been guided exclusively by the theory of nutrition.

My patients receive the diet which brings about the daily reduction of the body weight by a certain fraction. In otherwise healthy men, this fraction amounts, as a rule, to from .15 to .2 per

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cent. in a day, hence, in a man weighing 70 Kg., about 1 Kg. per week. Only in very exceptional cases do I consider an acceleration of the rate permissible; often, on the contrary, a retardation imperative. In youthful individuals, also in complicated cases, I frequently content myself with a daily decrease of .1 per cent., hence .50 Kg. a week in a weight of 70 Kg.

Since the treatments are, almost without exception, carried out at home, time is at my disposal in unlimited or almost unlimited amount, and I can set my goals far away without endangering the health of my clients by forced treatments.

My rich experience has taught me that that rate (with the exceptions which, as mentioned, occasionally occur) represents the ideal.

The task which I set myself at the beginning of each treatment has a certain similarity with the activity of a captain who must bring his ship to a particular goal at a time previously fixed.

First I determine the goal and the moment of the arrival. Suppose, for example, that by weighing and measuring and, according to the principles to be mentioned

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in Chapter XXVI, we intend a removal of 10 Kg. of fat and at a rate of 1 Kg. per week, hence an entire period of 10 weeks for the treatment.

According to principles which are discussed below, I prescribe a diet and regimen and record the result at definite intervals.

In many cases I find in the first, and especially in the particularly important second, record that the decrease in weight is proceeding at the rate desired. Then the regimen remains unchanged. In other cases the record reveals the fact that we are advancing too quickly; then, in spite of the protest of the patient, happy over our success, the course is retarded. In other cases, however, progress is too slow. Very rarely it happens that no progress has been made, or even that the patient is heavier than at the beginning. In the last three cases mentioned a careful investigation must be made to find out whether the causes of failure or insufficient progress are due to improper directions or to the *deficient observance of proper directions*.

According to the result of these investi-

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gations, either the diet is changed or an effort is made to attain a greater conscientiousness in the observance of the instructions by influencing the patient. He is also taught that infrequent, even if greater, deviations cause less injury than frequent and small transgressions. The latter lead, almost without exception, to a standstill in the weight, or even to an increase, thereby causing disappointments, self-reproaches, and discontent, while the success of a "sinless" week gives the patient the exalted feeling of being a hero, and spurs him on to perseverance in the treatment.

The systematic steering for a goal is only possible when a record of the weight can be made at sufficiently short intervals. Patients who are conveniently near must visit me every week, while those living farther away must send weekly reports. The family physician draws up the reports of those whose health is not quite beyond doubt.

These visits or reports give an opportunity to undertake corrections in the prescription, to review the general condition of the health, to change the plan of treat-

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ment, especially so far as the rate of progress is concerned. There are cases, though rare, in which the patient is not fitted for the treatment for reasons which cannot be ascertained at the first examination. Although the deprivations which I require are easy to bear, indeed are scarcely felt as restricting by a man with the normal development of those mental qualities which are commonly designated as character, there are men of whom almost nothing can be demanded in this direction. When normal men report a slight, easily endurable sensation of hunger, the latter announce unendurable, ravenous hunger, which, according to their opinion, must be followed by the severest complications, cardiac weakness, and collapse, if not satisfied. They have never tried to overcome the "ravenous hunger," because they do not think they are equal to the danger involved.

In an institution we can venture to give such men further treatment. If not, I must advise them to give up the treatment, perhaps to postpone it until they have become more energetic and wiser. We encounter these obstacles at times in

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youthful individuals. A few years later they have disappeared and it is possible to carry out the treatment without hearing complaints.

The records put me in a position to give attention to the wishes and troubles of the patients as they appear. By small changes in the prescription it is almost always possible to take the edge from severities which we ourselves cannot suspect, even with the greatest experience (because they are not felt by other men).

All these reasons cause me to hold fast to the principle of designating the recording visits or reports as the *conditio sine qua non* of every treatment. I would consider it a gross professional error to draw up an obesity regimen for a man, unknown to me, on the basis of a single conference and examination, however thorough it might be, and then to dismiss him and not to trouble myself further as to the progress of the treatment. This could actually be injurious. For example, if the weight decreased too rapidly, and the treatment should not be stopped in time, very material harm might be done.

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If success fails to appear in the first or second week, because of misunderstanding of the prescription or because of dishes prepared in a manner opposed to the treatment, no difficulty arises in teaching the patient, who has remained in touch with his physician, or in assisting him by altering the prescription. After a few days or weeks the man who is left to himself gives up an unsuccessful treatment and believes that he can no longer be helped at all.

There are especially "sly" and saving men who do not present themselves even one single time to the physician, but undertake the treatment with the help of a prescription, borrowed somewhere. In this way, as we can understand, the most portentous blunders occur.

Thus in one instance the very busy husband of one of my patients, a man 180 cm. in height and weighing over 100 Kg., kept up for a week the same diet as his wife, who was 152 cm. in height and weighed 70 Kg. and who was almost inactive, with the result that he lost about 3 Kg. in a week, but thereby weakened himself so

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much that he was obliged to give up his work for some time.

It is a matter of every-day experience for me to hear about treatments, ostensibly ordered by me, that have resulted disastrously, when closer investigation shows that I have never seen the patients. In most cases a borrowed prescription formed the basis of the treatment. Those who lend prescriptions ought to know they are not doing their friends a service.

CHAPTER VII

At first glance it might seem that the empirical method, the details of which are to be discussed more explicitly later, must have a poorer foundation than the method which prescribes every meal, every dish on the basis of its caloric value. I believe, however, that in the latter case we are confronted with many unknown and variable quantities, and that the computed determination of the regimen involves more serious errors than does my method.

The quantities which are taken into account are:

(1) The food requirement, computed on the basis of the patient's body weight, expressed in calories.

(2) The caloric value of individual articles of diet.

(3) The coefficient of assimilation.

An individual's need of nutriment, as is well known, depends on very different circumstances: primarily on the body weight, but also on the body surface, on

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age, on sex, on the mode of life, and on many other known and unknown quantities. It has been shown that some men have active and others inactive tissue-change.

The caloric value of articles of diet is a quantity which can be determined accurately. Dishes of a certain oxidative value can be prepared, either by recording a test every time or by exact quantitative preparation. But a great physicochemical apparatus is needed for that, and very much time and trouble. It is only possible to do justice to this desideratum in institutions with well-appointed laboratories and trained assistants. As soon as the preparation of dishes is left to the household of the patient, as has almost always been the case in my practice, the computation of the caloric value ceases. The true figures differ very considerably from those contained in books and tables. The ingredients themselves, even those of which we would not suspect this, as, for example, rice, differ in their nutritive value. To this must be added the influence of preparation, especially of the fatty content of many dishes. Prepara-

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tion according to the individual taste of the housewife or of the cook, according to the custom of the country, and according to religious observances, can bring it about that dishes of equal weight, which bear the same name, differ enormously in their nutritive value. For example, in Hungary, green vegetables are usually prepared with great quantities of fat, cream, and sugar, and represent, from our standpoint, something quite different from the same dishes in Vienna, or, indeed, in England and France.

The water content of foods also varies from country to country and from house to house, a fact which is not unimportant, especially as regards the different kinds of bread. The fatty content of animal foods may differ with every mouthful.

Therefore we are not protected from making great mistakes when we draw up a diet schedule (on the basis of the tables) with a definite caloric value.

Finally, the third factor is the coefficient of assimilation, which has been established for different articles of food by a series of observations. Even this quantity is variable, and, what is more, not merely

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in different individuals, but also in one and the same individual, especially under the influence of a reduction treatment. While the patient is on an excess diet, doubtless the nutriment will be more poorly assimilated than during the treatment. The comparison of the relative amounts of solid excrement shows this. Although the diet which I prescribe contains chiefly cellulose materials, a considerable portion of which should reappear in the stools, the percentage of the feces is reduced much more than that of the nutriment. It is also probable that the organism, before it attacks its own fat, uses up the nourishment offered, up to the very limit. In the condition of long-continued, severe hunger, even substances otherwise indigestible are not merely swallowed, but probably also digested. The reports of Sven Hedin and other desert travellers admit of hardly any other interpretation.

Accordingly the assimilation of nutriment during the treatment must be recorded daily so that no error can be made.

We have seen, then, that the three points considered *fixed*, which ought to

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form the basis of an obesity regimen according to theory, are by no means fixed. Therefore I prefer to introduce them into the equation not as "known quantities," fearing thus to obtain a value which deviates far from the truth for the "unknown quantities," that is, the amount of nourishment to be prescribed.

An experienced specialist in the nutrition of the horse, Hans Jirsik, said recently: "Chemistry is a noteworthy but by no means infallible adviser, and its directions should first be tested by practical experience." The horse, for which this direction is meant, and which is fed chiefly on oats, hay, and chaff, and whose single individuals differ from one another much less than men, certainly is subject to much simpler conditions than in our practice. The sentence quoted has so much the more validity for men, since we have to reckon here with the greatest individual differences, with healthy and diseased digestive organs, and with an immense number of articles of diet, which are differently prepared in every household. Leyden expresses the same thought with reference to fattening treatments in

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these words: "For it is a question of the effect, not of the dogmatic-physiological calculation."

I do not wish to fall into the error of the "Banting treatment." In it reduction is attained by the supply of a nutriment which contains enormous quantities of meat and almost no carbohydrates and fats. Thus severe injuries to the health were frequently observed. But I give my patients more albuminous food (at least 1 gramme to 1.1 gramme per kilogramme of normal weight) than is necessary, in order to satisfy their nitrogen requirement.

The circumstance that my patients remain permanently in good health, even when the treatment lasts months, and retain their full bodily and mental efficiency, is most eloquent testimony that they are exposed to no albumin hunger (of the organism).

It is the custom for a considerable fraction of the Vienna population to undertake on Sundays and holidays a more or less extensive mountain trip. In this connection it is often a question of very considerable demands on the muscles. There

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were several enthusiastic tourists among my patients who continued this fine sport with my consent even during the treatment. Their judgment of the influence of the treatment upon the efficiency of the body was unanimous to the effect that they felt stronger and consequently desired to increase the length and difficulty of the trips. I permit only young men with strong muscles, trained in mountain climbing and winter sport, with sound heart and normal blood-pressure, to indulge in trips which are longer than a simple walk of several hours. The treatment and the decrease in weight are not to be promoted in that way. I allow an increase in the nutriment for the extra exertion. An increase of 15 Gm. of bread and 10 Gm. of meat per walking hour has proved to answer the purpose. *However, every sort of "athletic achievement" is forbidden during the period of treatment.*

CHAPTER VIII

As already mentioned, I have endeavored to bring about the decrease in weight at a certain rate, which experience has shown to be harmless. I have also stated that I consider a decrease in weight of .15 to .2 per cent. in a day as the ideal. Now, it will be objected, with apparent justification, that I first prescribe and only subsequently learn the result; that at the time of beginning the treatment I do not even possess the basic principles by which I claim to be guided. At the beginning of my activity there were actually such difficulties, and I believe that it will be not without interest if I give a further description below of how I mastered them.

To-day, of course, such an abundance of experience is at my disposal that I can find in my memory, or, if this should fail, in my carefully-kept records for each new patient a case which is very similar to his, the regimen of which is tried first. *Mutatis mutandis*, modifications are always necessary. The division of the day for

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meals, the other habits of life, the direction of the patient's taste, and many other circumstances should be regarded. I do not believe that two entirely identical prescriptions have ever left my hands.

It is just this attention to the individuality of the patient which makes it possible for me to reduce the disagreeable features of the treatment to a minimum.

The regimen of the "analogous case" forms the basis of the prescription, in which changes are then made which are often insignificant from the standpoint of the theory of nutrition, but important and decisive from that of the patient.

Thus I generally succeed in hitting the mark approximately, even in the first prescription. At the next record the correcting and filing begins. The invalid feels a prick here and there. For example, he wants one of the meals increased at the expense of the others. Or he desires a special prescription for Sunday, or for days on which he attends the theatre. Or he recollects a favorite dish, of which he is especially fond, which is lacking in the first prescription and which he painfully misses.

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One might believe that at the expiration of the first week of treatment a full insight could be gained as to whether the prescription is correct. Indeed, we now have at our disposal a result, from the size of which we can measure whether the decrease is proceeding at the right rate. This supposition does not always prove true. In the transition from the old to the new mode of diet there is, almost without exception, a jump in the weight, the size of which depends not alone on the composition of the regimen, but also on the previous diet, which, as a rule, has not been correctly estimated quantitatively.

In about 75 per cent. of all cases the decrease in the first week of treatment is about one and a half times as large as in the following week; in 20 per cent. it is much larger. Often it amounted to as much as 5 Kg., in 4 per cent. it is equally large and in 1 per cent smaller than in the second and third week.

This rare exception often remains unexplained. Many times in women the cause is to be found in the occurrence of the menstrual period. Often before the

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patients came to me they had followed a regimen which quantitatively, especially as regards the consumption of liquids, was more strict than my own.

An extremely large majority of patients come to the treatment after a stage of excess nutriment. On the previous days and also on the day at the beginning of the treatment (with me they appear in the afternoon), they have consumed much greater quantities of solid and liquid food than on the days of the treatment. The contents of the stomach and intestine are therefore much more abundant and heavy at the first weighing than after the expiration of the first days of treatment, during which the excess liquid and the food residues from the "pre-treatment" period have been expelled. The decrease in weight in the first week of treatment is totalled up from two factors: the loss of fatty tissue and the difference in the weight of the stomach and intestinal contents. However, these latter quantities can amount to several kilogrammes, especially in men who have been accustomed to drink with their copious meals huge

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quantities of alcoholic or non-alcoholic beverages.

The second recorded weight gives us the first information about the time effect of the treatment. The attention of the patient, who is delighted by the great success of the first week of treatment, must be called to the fact that it can not continue at the same rate. We must also avoid the deduction that, because the first week has proved a great success, we are entitled to increase the diet. We would be much disappointed at the result of the next weighing. Often it occurs without our interference. The patient thinks over his case and, contrary to our prediction as to the slight success of the next week, arrives at the conclusion that one need be by no means so particular about following the prescription, since the first week has brought a very large loss of weight. He thinks that a decrease of 1 Kg. will probably take place even with a somewhat more abundant diet. Result: at best a standstill in the weight, generally a slight increase.

Many patients attempt, earlier or later, to determine whether the continual de-

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crease in weight is not an accidental coincidence with the observation of the regimens, and whether it is really necessary to stick absolutely to the directions. They commit transgressions which they consider harmless. The next weighing teaches them better.

Herbert Spencer asserts that a child does not learn to fear fire until it is actually burned. Relating the dangers of fire, he says, is no substitute for the experience. Therefore the child is allowed to feel the pain of a slight burn, by not being prevented from getting one, and it is thereby given an important experience for its whole life. I have followed this rule from practical pedagogy with my patients. I do not warn them overmuch about "sins of treatment," and I am not sorry to see them find out the consequences of their disobedience for themselves.

I wish now to indicate briefly the way which led me to my first experiences about the amounts of nutriment which are necessary in order to gain a definite daily or weekly result.

If a man is weighed at short intervals, let us say hourly (we can let him sleep

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during the night), and the weights are recorded in a table or curve, we find a course of daily deviations in weight which follows a law and is determined by definite influences. Such systematic weighings were first carried out in 1561 by Santario, born at Capo d'Istria, and led to the important discovery of insensible perspiration.

Every time a man eats, the body is increased by the weight of the meal; every emptying of the bladder or intestine decreases it by the weight of the matter expelled.¹

Aside from this, however, the weight also sinks *continually*, as Santario discovered. According to Rubner, the excretion of water-vapor through skin and

¹Laymen are accustomed greatly to overestimate the significance of the emptying of the intestine on the weight. The weight of the scanty stools, which are generally observed during the treatment, ought only exceptionally to reach 100 Gm. (the normal stool weighs 100 to 200 Gm.). To be sure, these losses can amount to several kilogrammes in diarrhoea. Here there are losses of water from the blood and tissues which are very quickly equalized by more abundant drinking when recovery begins. Hence when a movement of the bowels does not occur on the day of recording, this fact can affect an insufficient weekly result only very slightly. Constipation of several days' duration, to be sure, might give rise to quite respectable increases in weight.

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lungs (the cause of the steady decrease in weight) amounts to 60 Gm. an hour when the body is resting, and as much as 125 Gm. an hour during vocational work. Hence in a day this makes at least 1.5 Kg.

Now, these different influences bring it about by their coöperation that the minimum weight appears immediately before dinner, the maximum immediately after dinner. (Perhaps this rule only holds in those countries where, as in Austria and Germany, the chief meal is eaten at noon in middle-class circles.)

Therefore the weight is not, as one might believe, lowest in the morning before breakfast. The slight increase, which is due to the light breakfast customary with us, is much more than compensated by the urinary secretion, which is especially abundant during the morning hours, and by the insensible perspiration of the hours from 6 to 8 A.M.

The maximum and minimum weights are, hence, only separated by dinner.

It is now quite clear that the maximum weight can be voluntarily regulated within certain limits.

By varying the size of the noon meal

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I can keep the maximum weight within two limits. One limit is identical with the minimum weight, the weight before the meal, and would be reached if I should place the dinner at 0,—in other words, omit it; the other would be obtained by a dinner of maximum weight. Hence I would have to direct the patient to eat and drink as much as he could. But I choose a middle course, as will be shown in a constructed example. Let the patient to be reduced in weight weigh on the first day of the treatment 89 Kg. as his minimum. I give him now 1 Kg. of food, therefore, for example, 200 Gm. of soup, 120 Gm. of meat, 180 Gm. of vegetables, 100 Gm. of farinaceous food, and 300 Gm. of water. The maximum weight of this day is then 90 Kg.

The plan is now to reduce the maximum weight by 150 Gm. every day. On the next day the patient is weighed before dinner. He is given enough food to bring his weight to 89.85 Kg. On the eleventh day of the treatment the maximum weight can amount to only 88.50 Kg. and at the expiration of 100 days to only 75 Kg. Thus the rapidity of the decrease—the

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most important factor of all—would be brought entirely under the control of the physician and regulated in the simplest manner. The patient could be assured that on a certain day, not earlier and not later, he would attain a certain weight.

The considerations which oppose these methods, which I admit are grossly empirical, I have not suppressed. What happens if the minimum and the maximum weight do not run parallel—if, for example, the patient on the succeeding days remains equally heavy before dinner? In that case he would have to eat less and less for dinner; on the sixth or seventh day *nothing at all*. But then this could go no further, because the minimum of the day would be higher than the maximum. Therefore, in order still to carry out directions, we would have to advise the patient to give out food instead of taking it.

I have considered these difficulties well, but have not been dissuaded from making the trial first on myself.

In this connection some rules had to be followed. Three meals were given daily: breakfast and supper as uniform as possible with regard to quantity and com-

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position of the dishes; both meals *modest* in their nutritive values, so that room may be spared for a more abundant third meal. This third meal, the variable dinner, should give the key to the influencing of the weight. Further, since drinks influence the weight as well as solid foods, care must be taken that the quantity of water consumed, from awakening until dinner, remain constant. In the afternoon and evening the drinking of water was permitted, since the urinary secretion effects the equalization. Dishes which cause strong thirst were avoided.

The determination of the size of the dinner was made in the following manner. A coördinate system was drawn on millimetre paper. Ordinates: weights, abscissæ: time. On the first day of the treatment, after a moderate dinner, the first "maximum" was determined. It amounted to about 90 Kg. I wished to weigh 80 Kg. 10 weeks later. Both points were looked up in the coördinate system (90 Kg. on the 0 day and 80 Kg. on the 70 day), and joined by a straight line. The minimum weight was determined before dinner of the second and of

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each following day; and entered on the curve. *The vertical distance of this point from the line of the maximum weight determines the weight of the dinner for the day.*

To my joyful surprise it appeared now that the line of the minimum weight ran almost exactly parallel with the line of the maximum weight. In other words, when we reduce the maximum weight, which is in our power, a definite amount, kept within reasonable limits, the minimum and all other weights, also the weight on the morning of the following day, sink almost the same amount. (This circumstance was purposely ascertained.) Therefore there remained every day between the maximum and the minimum weights an interval which kept almost the same, which corresponded to a dinner sufficient to appease the hunger "according to the treatment." (The subsequent computation of the oxidative value gave 1200 to 1400 calories per day. The albuminous content amounted to 90 to 100 Gm.)

The lines did not run exactly parallel. They converged a little. Accordingly as

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time advanced, the dinner had to be limited a little. This procedure is also well founded in the theory of nutrition. The need of nutrition becomes slighter with the decreasing body weight. The diet necessary to maintain the individual approaches more and more a definite low diet. The deficiency of nutriment becomes smaller and corresponding to it also the decrease in weight. But if it is desired, as in our case, to attain daily equal decreases in weight, the quantities of food must be gradually lessened.²

Nothing would be easier than to carry an attempt of this sort *ad absurdum*. If the amount of food provided for dinner should be composed of dishes of especially high nutritive value, and hence should yield much fat and little water, the next day would probably bring no decrease in weight or no sufficient one. And if we were still to cling to the principle, the next dinner would become very scanty or be omitted entirely. All conditions

² I consider it more expedient not to restrict the diet with the advance of the treatment so long as this is possible, but rather to hazard a relapse of the rapidity of the reduction in weight.

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must be *exactly* followed which promise a *success* for the treatment.

The noon meal contained a constant amount of liquid in the form of water and soup, besides a constant amount of meat. The amount of the other dishes was variable: vegetables, also potatoes, farinaceous foods and fruit. No bread was eaten. In the first two or three days the decrease was very large; it depends, as already mentioned, not exclusively on the loss of fat. When this is repeated in the future, it is not to be recommended to enter these days in the tables and curve.

I have carried out such attempts in fifteen patients of different age by determining daily the minimum weight before meals and the size of the dinner resulting from the curve, which I then divided up into the different courses of the meal in the way which seemed to me expedient. Naturally it was necessary here and there to alter the other two meals also (at times there were even three). Otherwise, however, everything ran off smoothly; the body weight decreased precisely at the rate at which I had previously agreed with the patient.

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W. Underwood Hall

I have no doubt that in this way every man, no matter whether his tissue-change is normal or abnormal, whether food is cooked fat or lean in his house, can be reduced at a rapidity determined beforehand. Since the danger or the absence of danger of a treatment depends primarily upon this rapidity, I also keep this factor in my power. I can choose a rate which is so slow that injury can be excluded with a probability which borders on certainty. Thus mistakes or errors are corrected almost automatically. If too much nutritive value is supplied in the weight allowed for the meal, this is shown on the next day or in the following days by a too slight decrease, which requires a suitable alteration; and *vice versa*. The result of too slight nutritive value of the foods would be a too great decrease in weight and would necessitate its correction in the sense of an addition of caloric supply.

The difference between the procedure which I observed and the apportioning out of nutriment according to calories can, perhaps, be illustrated by a comparison. A steam engine is to be kept in

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operation. I insert an almost automatic regulator, which immediately cuts off the supply of fuel when the motor makes more revolutions than is desired, and which supplies more abundant fuel when the number of revolutions decreases.

But there is also a different procedure. It can be computed from the oxidative value of the coal, standing for the time being at our disposal, from the quality of the flue, the amount of the material unoxidized, which passes off with the smoke, from the loss of heat of another sort, etc., and the degree of efficiency of the machine, how much coal per day and hour must be burned up in order to attain a definite number of revolutions,—that is to say, the accomplishment of a certain amount of work. Since, however, all these values are usually only approximately correct, and because every machine has its individual peculiarities, even changes from day to day; so, finally, the performance of equable work by the machine can not be attained without *regulation according to the result*.

But in the case of men individual differences are much greater than in machines,

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and the principles upon which the theory of nutrition is constructed are by no means so well established as the theories upon which the construction and the operation of our heat motors are founded.

*On that account I have made regulation according to result, the basis of my method.*³

³ The calculation of the diets prescribed showed that, according to the individuality of the patient, from 800 to 2000 calories were necessary in order to attain the result desired.

CHAPTER IX

As already mentioned, only in fifteen cases was the supply of nutriment varied daily to correspond to the result of the weighing. Thus I gained the first experience regarding the *approximate* quantities of nutriment which must be given differently constituted men in order to gain a certain daily or weekly decrease in weight. Later I contented myself without exception with weekly weighings and directions, which remained in force for a week. This makes no essential difference. With the experience which is at my command I generally strike the right course approximately. And if I make a slight mistake in either direction, no harm can arise from it in the course of a week.

I exercised caution in the daily direction of the composition of the *menu*, either undertaking it myself or leaving it to the patient within certain limits. I allow him, for example, less of a nutritious vegetable than of one less nutritious, or less of a farinaceous food with a higher

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caloric value, consisting only of dough, than of one which produces fewer calories in the unit of weight, which, for example, also contains fruit (*"Nudeln-Apfelstrudel"*). I prescribe now daily equal quantities by weight of single courses, so that the average of their nutritive value is the deciding factor. Thus the direction becomes simpler, the computation easier and more certain. There are fewer mistakes.

The capacity of a meal to satiate depends, as already mentioned, not, or at least not primarily, upon its caloric value, but upon the weight and, especially, the volume of its solid constituents. Liquids are not counted; they are removed from the stomach in a direct way. We can not satisfy the appetite with water.

Now, since the satisfaction of the feeling of hunger must indeed be heeded, I prefer to recommend such foods as have a low specific weight,—that is, which possess a large volume for a certain weight. When patients from Austria are under consideration, I recommend them for this reason to eat frequently boiled beef for dinner, because this has a much

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greater volume for the same weight than meat dishes cooked in fat or broiled. One hundred and twenty grammes of boiled beef form a bulk which is greeted by most men as the usual—often, indeed, as an unusually large—portion, while a piece of roast beef or beefsteak of the same weight appears small and disappointing.

Boiled beef is also rightly considered that meat dish which is least injurious to sufferers from gout. Both properties of boiled beef which we have just discussed are of importance in the not rare combination of gout and obesity. Pity that this food, which also furnishes a tasty soup as a by-product, and which is eaten by all classes almost daily in Austria, is hardly known in most countries of the civilized world, or at most serves as food for the servants!

The wish to fill the patient's stomach without supplying him with greater quantities of actual nutriment causes me to make abundant use of some foods which might be designated as "ballast" food. To this classification belong cucumbers, also varieties of green salad, prepared with little oil, or, still better, without

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oil, besides radishes and black radishes, asparagus, artichokes, but, above all, fruit. Among the kinds of fruit which I prefer there are again: apples, especially sour kinds, and berries (currants, called *ribisel* in Vienna, and strawberries). Apples can be enjoyed eight months in the year and are relished by an exceedingly large majority of men, and contain but little nutritive value: 100 Gm. = 50 calories. Their sugar content amounts to 7 per cent. or still less. Pears, plums, cherries, oranges are also permitted in corresponding quantity. Grapes contain for the most part as much as 15 per cent. sugar. Hence, compared to apples, they must be granted in smaller quantity. In autumn grapes belong to the dangerous seductions of the table. Many men who, from fear of becoming fat, never put a lump of sugar (weighing 5 Gm.) in their coffee eat confidently day after day one kilogramme of wine grapes (they allege that grapes "give no nourishment"), whose sugar content alone amounts to 150 Gm. (600 calories), hence is equal to 30 lumps of sugar.

I never cease calling attention to the

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fact that the nuts, rich in oil, almonds, also the "Southern fruits," deficient in water but rich in sugar, may not be substituted for an equal weight of apples and pears.

But the principle otherwise holds good also for the varieties of fruit mentioned, and for some others, which I do not like to recommend (melons, mandarins). *No food is absolutely forbidden; each one may appear in the limits of a diet in a certain quantity. No food is unrestricted. Let every one be measured out. The quantity is determined by the scales.*

CHAPTER X

EATING according to measure and weight is first found in the method of reduction which was devised by W. Harvey, described by Harvey's patient, Banting, after whom it was named. Since then it has formed the foundation of all *sensible* treatments of this kind.

But while many writers reserve quantitative nutriment according to the scales only for certain more serious cases, I take the ground: *without scales no cure*. Even when there is but little fat to be removed, we cannot do without the scales. *I owe my complete absence of failures primarily to adherence to this principle.*

I found no serviceable scales for determining the weight of the food. The balance scales with weights are entirely unsuited, because determining the weight would demand far too much time and attention.

Only spring-scales are adapted to our purposes. But some important alterations must be made in them before they correspond to all demands. In place of the hollow and generally too small metal

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dish, we must put a flat plate upon which any vessel we want can safely stand. But the most important alteration consists in the net weight apparatus which I first introduced.

It is troublesome and tiresome to weigh the plate first, then food and plate together, in order to compute the net weight by subtracting the first number from the second. Many men require for this mathematical accomplishment paper and pencil, others indeed work out the calculation in their heads, but are so absent-minded and forgetful that they do not notice the weight of the plate, are, therefore often forced to place the foods on a second plate in order to determine the weight of the first plate again. Still others make wrong computations and thereby endanger the success of the treatment.

These different "cases" are not invented, but experienced. Therefore I had to hasten to seek radical remedies, if the eating according to the requirements of the scales was not to fall into disrepute as being too complicated and one which makes the dishes cold and unenjoyable

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because of the great amount of "weighing and calculating."

There are two food scales which I have invented. The older, less perfect one, an improvisation, has two pointers, one firmly fixed to the axis, and one recognizable by a varying form and color, which can be turned upon its axis with some friction. Now the weighing is done in the following manner: The vessel intended to hold the food is placed upon the scales, the fixed pointer is pressed against the dial plate with the thumb of the right hand, while the movable pointer is pushed around to zero with the fingers of the left hand. Then the food is placed upon the plate. Its weight is read off from the movable pointer. We would expect that this simple process could be carried out by every one without error. Experience showed, on the contrary, that two mistakes which are grave under certain circumstances are committed. For example, because of an inexact fixing of the immovable pointer, the movable pointer, when the other is released, does not stop at zero, but deviates to one side or the other. The second mistake is based upon the fact that

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the decisive pointer is not near enough to the dial plate, so that incorrect readings are possible because of wrong position of the eyes. The eyes must be exactly in the prolongation of a perpendicular which is drawn from the tip of the pointer to the level of the dial plate. Incorrect reading alone can easily account for mistakes of 20 Gm., and the total of both mistakes for mistakes of 40 Gm., which would defeat the purpose of the weighing.

Very recently I succeeded in constructing a net-weight food scales which greatly excels the one just described in regard to simplicity of manipulation, and which absolutely excludes errors in weighing.

The new scales (Figs. 1, 2, 3) has only one fixed pointer, which revolves close to the dial plate, so that parallax errors in reading no longer come into consideration. The deduction of the weight of the vessel is rendered possible *by the fact that the dial plate itself can be revolved.*

The process of weighing is as follows: The dish (bowl, glass) is placed upon the scales; the dial plate is revolved with the help of the peg *A* until its zero point is covered by the pointer. Then the food is

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placed upon it. We can read the weight directly from the pointer. If a second food is to be placed upon the same dish and weighed, for example, vegetables with meat, then the dial is first turned to the pointer until this stands again at zero, and its weight is read off directly after the second food is placed upon it. The three illustrations show (1) the scales before the beginning of the weighing; (2) with the weight of the plate deducted; and (3) after the food has been placed upon it.

A suitable portion of solid foods is selected and weighed off on the plate already deducted. We add or subtract from it until the directions are satisfied. Soups and other liquids are carefully poured in until the pointer arrives at the correct place.

The weighing should be exact to 10 Gm. As I have ascertained by trials, it requires a period of ten to fifteen seconds, hence not more time than is at the disposal of even the hastiest.¹

¹The new food scales which bear my name are manufactured by the wagon and machine factory, C. Schember and Sons, in Vienna and Budapest, and can be obtained in the warehouses of this firm and from dealers in surgical instruments and apothecaries.

CHAPTER XI

MOST of the invalids who seek my advice breathe a sigh of delight when I inform them that they may take water or mineral water in any quantity during the treatment. The fear of thirst obviously prevents many men from attempting an obesity treatment. Many cannot be brought to believe that fat can be lost without suffering thirst, and some persuasion is often needed to convince them of the complete untenableness of the opinion that water is one of the most dangerous fattening agents. This belief is general, although the most experienced physicians in this field, as Von Noorden and Ebstein, combat it as a superstition exactly as I do. As the last-mentioned author has ascertained, the prescription to bring about a reduction by non-drinking goes back to Pliny the Younger. A French physician, named Dancel, sought to cure complicated and uncomplicated obesity by thirst treatment in the sixties of the past century. This procedure be-

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came generally known in Germany and with us through Oertel and Schweninger. My experiences, however, which, as mentioned, fully coincide with those of Von Noorden and Ebstein, convincingly teach that it is superfluous to make a man thirst for the purpose of losing fat.

The limitation of the supply of water, which without exception causes more tortures than hunger, should be stricken from the list of the *permitted* means of reduction.

Agreeing with Von Noorden, I believe that only indirectly can thirst display an effect, since it destroys the appetite in many men. When the patients are not permitted to drink at will they do not relish their meals, and it may happen that for a while they eat less than is necessary for maintaining the body weight at the same figure.

The organism's poverty of water which must appear in the first days of a thirst treatment naturally diminishes the body weight, and this loss of weight may in the case of toppers—there are also water toppers—amount to several kilogrammes. Naturally it has nothing in common with

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reduction. As soon as the men in question thoroughly quench their thirst again the weight rises to the earlier height in a very short time.

I do not limit the supply of water merely because I consider thirst an entirely unnecessary torture, but also for another reason.

In further agreement with Von Noorden, I believe that the withdrawal of water is directly injurious to many (patients with gout, sufferers from hepatic and renal calculi), and is able to incite attacks of their disease.

Obese gouty patients, who had previously taken thirst treatments, and who, nevertheless, had suffered from repeated attacks, became unusually well and remained well for a long time under my regimen, in which they were not merely permitted but even directed to drink great quantities of water or mineral water.

It is perfectly clear that we would do a great injury to men who are suffering from the excretion of tissue-change refuse hard to dissolve if we were to limit the ingestion of the principal solvent.

Obesity treatments were considered, and

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are considered even to-day, as inciting causes of neurasthenia. I am convinced that the prescription of a thirst regimen, almost universally followed some time ago, is also to blame for that. Not that I believe that it is possible to create neurasthenia by such a regimen, but, indeed, I heard from my patients that through this a latent neurasthenia manifested itself in them.

It may occur that, on account of other ailments which exist along with obesity (cardiac defects with œdema, contracted kidneys), a restriction of the supply of liquids must be recommended. As a matter of course, I recognize this indication. But then it is the complication, not the obesity, which leads me to do that, and the restriction never exceeds the modest measure which at other times is appropriate in these affections, and hence never reaches such proportions as to warrant mention of a thirst treatment.

W. Ebstein reports that the diet recommended by him as a remedy for obesity exercised an extremely favorable influence upon the abnormal thirst which torments many obese persons, and he assumes that

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the abundant fat which characterizes his prescriptions of diet exerts the appealing effect.

In the face of that I can state that also the diet which I prescribe, which, indeed, is not absolutely free of fat, yet contains but little fat, exerts this often positively wonderful effect.

In 1906 a 34-year-old merchant from Bohemia, who then weighed 125 Kg., consulted me. His weight during the last years had increased on an average of 10 Kg. per year. Various earlier treatments brought only an unsatisfactory and temporary success.

His report began with the following statement: "Every day I drink at least 10 litres of water; if I were to be prevented in that I would become crazy." The condition for undertaking the treatment was my assurance that he could drink absolutely as much water as he liked. The man was a large eater, consumed great quantities of meat. His urine contained no sugar.

A week later I saw the patient again. He was taken aback. From the first day of the treatment his abnormal thirst had

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disappeared. He drank no more water than many other men, about two litres a day. The treatment progressed according to schedule and lasted several months. The tormenting thirst did not return again.

This was the most noteworthy case of this kind. Yet I *regularly* observed the thirst-quenching influence of the treatment both before and since.

Let it be well noted: Here it is a question of water thirst. Beer and wine thirst belong to another chapter.

CHAPTER XII

WHEN I was a boy and passed my holidays on the estate which my parents managed, I was often glad to look on when the cattle were given their fodder and water. First came the fodder, then the man went with filled drinking pails from cow to cow, from ox to ox. At that time men could also drink water at will during their meals.

Later the relations were reversed. It was found incorrect, indeed even horrible, that the cattle should not drink while eating, and there were constructed special, ingenious arrangements with a constant water-level, vessels covered with lids, which the cattle open themselves with their mouths. The cow can now drink as often as it likes. It makes abundant use of this freedom. But men have been forbidden, chiefly by "nature-physicians," to drink during meals.

No examination is to be made here as to whether or not this measure is appropriate in many cases. It only interests us

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in so far as obese subjects are often obliged to suffer from it. In many institutions which are sought by the obese to cure their ailment the separation of food and drink is carried out with the greatest severity. As former frequenters of such establishments inform me, this rule is generally felt to be very tormenting. In time, to be sure, many accustom themselves to it as well as to other discomforts.

On the basis of my rich experience, I can assert most definitely that it is quite needless to subject our patients to any compulsion in this respect. They may drink water, as much and as often as they wish, hence also during meals.

Drinking while eating has an especial charm for most men. It forms a substantial constituent of the pleasures of the table.

Let us probe more deeply into this circumstance.

As is well known, the intensity of the perception of every sense impression, which operates uniformly for some time, becomes dulled, often to complete disappearance. This is true of all senses, even of the "higher ones." Finally we are no longer aware of the clamor of the uni-

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formly clattering mill, any more than the intense, uniform noise which penetrates to our city dwelling from the street. Our sensitiveness to continuous stimuli of both "chemical" senses, smell and taste, sinks with extreme rapidity.

If we enter a room, the air of which is contaminated by illuminating gas, we perceive this immediately, even when the percentage of gas is very slight. But if the gas streams out steadily while we remain in the room, we generally detect nothing even when the amount of gas is so great that the person just entering starts back in fear. That is true of all smells.

This is exactly the condition with impressions of taste. The perception itself, but especially the pleasurable sensation connected with the perception, dies out quickly when the same stimulus exerts influence longer at the same intensity. The interruption of the sensation by each act of swallowing counteracts this to a certain extent. At all events, each of us knows that the first mouthful of a delicious food tastes better than the tenth, this better than the twentieth. Men (and also animals), however, have found ways

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and means to prevent this decrease of the pleasurable sensation. The "monotony" of taste perception must be done away with. In this direction our palate is much less fastidious than our ears, which, in order to appreciate pleasurable sensations, require a rich succession of different tones. The palate is satisfied with *two* alternating "taste-tones," which must always harmonize, like the acoustic tones.

Almost every food which one who has outgrown infancy¹ consumes with relish consists of at least two components. With coffee, tea, etc., bread or cakes are eaten.

¹ The pleasurable sensations of infants while nursing are, as is well known, caused much more by the act of sucking than by the taste of the food. The rubber nipple almost replaces the mother's breast for it. The child of three years already consumes complicated meals which are similar to those of the adult, even with respect to the conditions mentioned here. But between these ages there lies a period in which the food of the children of prosperous cities (in the country the child who has just been weaned generally eats everything "along with") is composed almost invariably according to theoretical principles of nutrition. The pleasure in eating, about the lack of which we so often hear complaints, might perhaps be heightened if mouthfuls of two different foods were given alternately; naturally, those which agree well in taste and wholesomeness. Now and then even necessity teaches people to discover this expedient. Recently I attended the meal of a two-and-a-half-year-old world-citizen. A spoonful of broth and a spoonful of apple sauce were given him alternately. As I was taught, only thus could they succeed in getting the child to take the sufficient amount of food.

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Soup almost always contains solid constituents, which taste differently from the liquid. With roasts, at least one side dish is eaten: vegetables, salad, preserves. Potatoes often form a component of the vegetable courses.

Farinaceous foods often contain additions of fruit or marmalades, or are eaten with whipped cream or fruit juices. With ices there are waffles, etc. There are always two taste tones, which are struck alternately.

Frequently the two concordant notes are chosen so remarkably that theoretically they must seem to be discords, although they harmonize excellently in practice.

If we observe children to whom, for example, different tropical fruits are given as dainties, we see that they consume alternately an almond and a Malaga berry. Other examples of this kind could easily be found. The cigar with black coffee also belongs here.

Now there are two means, which can almost always be attained, of radically interrupting the monotony of a protracted taste sensation and of imparting to the

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following mouthful the same zest which the first of its kind possessed: *a drink or a mouthful of bread*. Both of these remove the remains of the food just eaten from the gustatory papilla. If the drink consists of water, which is by no means tasteless when of good quality, but which can appear as tasteless in comparison to the foods, the continuity of the taste sensation is interrupted; there is a pause in the melody, and the subsequent bite is again relished and enjoyed as fully as the first. A piece of bread has a similar effect, the taste of which being less marked, I might say "neutral gray," makes a good foil for every other kind of taste.

The expediency of dividing off two courses of a meal by a piece of bread or a drink in order to prevent the confluence of discordant taste impressions appears of itself after what has been said.

We make the treatment more endurable for our patients if we do not designedly limit the maximum of the pleasurable sensations which their diet can afford them. And for the majority of men the drinking of water during meals belongs among these pleasurable sensations.

CHAPTER XIII

ALCOHOLIC beverages also have an effect similar to that of water. Besides the mechanical removal of the remains of food which is palatable, a new taste-element, generally very agreeable, is brought into play. In beer it is the bitter materials, the carbonic acid; in wine, different palatable and pungent constituents; in both beverages, above all, alcohol itself.

None can dispute the fact that these beverages heighten the pleasures of the table; often to such a degree that a consequent incitement to abuse arises. On the other hand, however, there is no doubt that wine and beer have a harmful, or at least a retarding, effect upon the progress of obesity treatments. Alcohol is indeed a poison, but, as has been shown, also an article of diet of high heat-producing value. It protects a quantity of stored-up fat which is equivalent to it in caloric content from the destruction we intend. Other nutritive materials besides alcohol are contained in beer and sweet wine.

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According to Rubner, one litre of beer contains as much oxidative material as 500 Gm. of meat or 500 Gm. of potatoes.

The abuse of alcoholic beverages could only very seldom be established as a cause of obesity in the case of the patients who followed my advise.

But a false picture of the etiology of the disease would be formed by giving general recognition to my statistics in this respect. In places with a large consumption of beer enormously fat figures are seen in great number, and every child knows the connection between beer and fat belly. Conversely we could probably draw an inference from the average weight of the adult population of a city as to the customary use of beer there.

Corpulent beer drinkers seldom seek my aid, and probably other doctors who are occupied with the treatment of obesity have the same experience. They have generally become indolent through alcohol, and they carry their heavy burden with amazing carelessness. The fear of the prohibition of beer is greater than the fear of severe suffering and early death. The weight of their body, which limits

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their activity to a minimum degree and which allows them, as their only recreation after the day's cares, to sit in the saloon and to continue the enjoyment of beer, forms an important part of the *circulus vitiosus* which threatens to destroy their lives prematurely.

As already mentioned, I am seldom confronted with the problem of offering advice to *confirmed* drinkers. But I see the "larval stage" very often. There are men, generally young, who have become fat through a surfeit of solid food, but who also consider a few glasses of beer, wine, or cognac indispensable for maintaining their working power or their good humor.

If they are young individuals, then I strike alcohol in every form relentlessly from their diet. I am sure that I have brought about many a rescue from the claws of this dragon. I found, also, as Forel and other champions of the anti-alcohol movement, that complete abstinence is easier to attain than moderation. It is easier to refuse the first than the second glass.

In older patients I first begin with the

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prescription of entire abstinence. The treatment is promoted by absolute abstemiousness. But when it cannot be carried out, and when the patients are content with small quantities of alcohol, I am forced by necessity to submit to compromises.

I was forced to allow here and there an eighth, or at most a quarter, of a litre of light wine per day or a glass of beer on Sundays.

Only once was the following prescription wrung from me by a gigantic young opera singer as *conditio sine qua non* of the treatment: Daily, half a litre of beer; on days when he sang, one litre of beer. On *Meistersinger* days (he sings "Walter Stolzing"), one and one-half litres. Even in this case I succeeded in attaining a sufficient decrease in weight so long as the artist followed my advice. The beer forced a corresponding quantity of other nutriment from the prescription.

This case forms an exception, a curiosity. Otherwise, in the interest of my patients, I have been an opponent of alcohol in every form.

CHAPTER XIV

IN the search for the causes of obesity, I found in my patients that a certain mistake in nutrition was most frequent: immoderation in the consumption of bread. I do not think I am mistaken when I assume that 90 per cent of my *clientèle* brought about their increase in fat in this way (as already mentioned, beer drinkers are not included in my material).

In order to obtain the knowledge I had to call attention to this point in ascertaining the history of the patient, and I did not allow myself to be satisfied by evasive answers. When one of our patients is required to describe his previous mode of nutrition in every detail, we can bet a hundred to one that he forgets to name the bread in the noon and evening meal. There is no intentional reticence in this, hence no act which would be charged so severely against the witness in court, as untruth.¹

¹ It is diverting but also interesting from a psychological standpoint to observe how the patients never omit to report at this examination everything which they do *not* eat. "In the morning nothing," "no soup," "no potatoes," "tea without sugar." Merely tea always means tea with sugar, cream, rum, etc. Only a closer inquisition brings these details to light.

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Eating bread at the table follows almost automatically, without the participation of the cerebral cortex, as the alternating advancing of a leg in walking. This is begun even before the soup. Every one thinks it necessary to eat bread with fish or other dishes. The roast, so many believe, cannot be eaten at all without bread; especially the fat sauces require bread as a side dish. Bread is eaten between the courses, and bread, butter, and cheese must form the conclusion of the richest dinner.

As is well known, the bread consumed in the Austrian restaurant is paid for, it must therefore be reported how much of it has been taken. Let the observer note how often the diners have no idea of how much they have eaten.

In 1905 a report came to me from a southern city of our empire, first by letter, then personally, that all three children of a family had become abnormally fat without discoverable cause. The eldest son, 16 years old, weighed 116 Kg.; the second, 11 years old, 98 Kg.; an eight-year-old girl, 80 Kg.

Inquiry as to the mode of nutriment

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was answered as follows: In the morning coffee is drunk; in the afternoon soup, meat, vegetables, farinaceous foods are eaten; in the evening cold meat, preserves, and salad; not more of any of these than others are accustomed to eat. All kinds of sport, especially cycling, were practised abundantly.

I considered it advisable to go to the bottom of the matter personally, and, for this purpose, I participated in all the meals of the family for a day. Now a sufficient explanation as to why the children put on fat was revealed. The oldest boy ate daily at least two kilogrammes, often even more, of a dry wheat bread which contained but little water; the two others at least one and one-half kilogrammes of it.

The quantity of bread, 4800 calories in one case and 3600 in the other, might have sufficed alone, without any other food, to bring about an intensive addition of fat in the three children.

This is probably my most striking case. I have no certain knowledge of it, because only in very exceptional cases was I in a position to record with the scales the

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food which the patient chose himself. Heavy consumption of bread is, however, admitted by the overwhelming majority of my patients (to be sure, often only after searching inquisition). And among the few who assert that they eat little bread, there are certainly individual cases who thereby deviate from the truth without perhaps knowing it.

There were many among my patients who did not exactly live in luxury, and it can be understood that these fattened themselves with one of the *cheapest* foods. But I was surprised when I could determine that even the most wealthy of all, *almost without exception*, only put on fat because they were immoderate in the consumption of bread.

It was demonstrated in an earlier chapter that bread is especially adapted to bring the sense of taste, if I may call it that, down to zero and to make it as susceptible to every following mouthful as though it were the first of its kind. By interspersing mouthfuls of bread, a larger quantity even of rich and fat food can be eaten with enjoyment. Fat sauces, for example, urgently require bread to make

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them palatable. We will see that my patients, if only for this reason, have to give up fat sauces.

Besides, bread belongs to the few foods which can be eaten daily and hourly, of which we can not "overeat."

Bread is perhaps the only solid food which can be eaten in a large quantity in connection with butter and cheese, even upon a full stomach, without the appearance of repugnance or disgust.

Guided by the endeavor not merely to cure my patients but also to guard against relapses, I find that I am induced in the majority of cases to eliminate the use of bread during the two chief meals. As an article of food rich in carbohydrates, bread, theoretically, is to be judged no differently from many other foods of similar composition, but in practice, according to my experience, it is the most dangerous to our patients, because an excess of it is eaten altogether too easily, and because it leads to more of other, especially fat, foods being eaten than is permissible and beneficial.

An *excessive* consumption of meat is also spoiled for many if they are not

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allowed to eat bread at the same time. In this way we succeed in satisfying men who have this inclination with the portion of meat which is proper, even when it is substantially smaller than the accustomed one.

Naturally, there would be no difficulty in finding a place in every prescription for a small amount of bread for the noon and the evening meal. But I consider it more correct, especially in the case of the numerous obese people who previously ate a great deal of bread, to accustom them to absolute bread abstinence, because success with this, exactly as in the case of alcohol, is easier to attain than educating them to be temperate, and because I attach especial importance to disaccustoming them ever after from eating bread with the chief meals, and thereby eliminating the most important cause of the renewed fattening.

Exceptions occur in the cases in which the household provides cold meat every evening. It would be terrible to forbid absolutely the side dish of bread, which is always customary with cold meat and

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which is difficult to replace by anything else.

Many men eat only cold meat in the evening once or twice a week. I am accustomed to allow a corresponding quantity of bread for such days.

I permit almost regularly a small quantity of bread (30 to 80 Gm.) to be a constituent of the first breakfast. This is not so dangerous as eating bread at the chief meal. If the patient has been accustomed to eat his first breakfast without bread, he continues to do so. He is recompensed for it at other meals.

The nutritiveness—that is to say, the caloric value of the bread—varies a little according to the material from which it is prepared. Wheat bread (100 Gm. = 265 calories) is more nutritious than rye bread, the latter again more nutritious than pumpernickel (230 calories) and than a variety of the latter, the so-called “simonsbread,” esteemed by many. But the differences are not large enough to have any weight in the small amount of bread which I allow. Hence the patients may choose the kinds of bread which taste best to them, and perhaps even vary

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them in the course of the treatment, or from day to day.

Let mention still be made of a widespread prejudice which, as we saw, is so frequent in our subject.

The consumption of fresh rolls (white rolls) is tabooed in obesity. On the other hand, toast or zweiback is considered harmless, perhaps even useful. Again and again I hear the complaints of the patient, innocently punished: "I have become fat in spite of the fact that I eat only toast and never fresh rolls."

I often have trouble in inducing the patients to eat fresh (that is, untoasted) bread (the weight determined by the prescription), in spite of the fact that they prefer the latter because of its superior flavor. An expedient can be found for those who cannot be taught and for those who prefer toast by allowing them to toast the bread which has just been weighed. Equal parts by weight of fresh and toasted bread vary substantially in their nutritive values. Toast (the caloric value of 100 Gm. amounts to about 360) is more nutritious than fresh bread, since in toasting a loss of water is effected,

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which is significant, but which varies according to the method of toasting. The nutritious constituents are in part made more easily assimilable and are better used up by the dextrinization of the starch.

The fear of water extends, as it seems, even to the water in bread, which must then be driven out by toasting. In view of the very small quantities which enter into question, it is even more foolish than the "hydrophobia" which opposes drinking.

CHAPTER XV

THOSE inclined to obesity ought to limit the number of their meals to a minimum during the treatment and also later, hence their whole life long, or at least so long as the inclination to put on fat is present.

Not all physicians agree on this point. Many recommend more frequent, lighter meals.

My personal experience and that of the most intelligent of my patients cause me to stick to the principle: *Few meals—three, at most four, in a day.* I believe that my standpoint also has a theoretical foundation, and I will attempt to show this here, although I actually attach importance only to the result of the practical test.

If animals are to be fattened, food is supplied them as frequently as possible. The chemical work which the organs of digestion represent is kept in continual operation in the daytime; at times even night shifts are added. Many physicians follow a similar procedure in fattening men,

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As soon as the stomach is emptied or can be considered emptied, new food is introduced, and in the selection that kind is preferred which quickly leaves the stomach. Thus digestive disturbances may arise which demand the interruption of the fattening process for several days.

The technic of infant feeding has undergone a powerful reform in the last two decades, exactly in the point which occupies us here. It is very probable that this reform has a considerable share in the huge decline in infant mortality, and thus also in the enormous decline in the total mortality of the population of all civilized countries.

While formerly the child was fed with the breast or with the bottle as often as it expressed its discontent with its situation by crying, the number of daily meals is now restricted by all child specialists to six, five, indeed, in some circumstances, to four, and the observance of sufficiently great intervals between the meals in the daytime, and of a very long pause, lasting all night, is stated to be a very important requirement in this question, which is so important to all humanity. The result of

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this measure was that the failures in rearing, which end very frequently in the death of the child, became less frequent, and that the number of digestive disturbances also decreased; that, further, the increases in weight of the children became greater and more uniform.

The restriction of the number of meals is certainly not the only cause of the lower infant mortality. The more frequent enforcement of feeding at the mother's breast, as well as the advances in the preparation of artificial food,—on the one hand, asepsis; on the other, more suitable modification,—has also contributed to this result. Then, too, hygienic and therapeutic achievements, which have led to the diminution of the mortality from tuberculosis and diphtheria, have contributed, as well as the correct distribution of the infant's meals. The result (which will be recognized at some time in the future as the *greatest* achievement of our time, truly not lacking in advances) has been the reduction of the total mortality by about a third of its earlier amount.

The stomach of the infant is not to be filled again before the preceding meal

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is expelled. Even this alone does not suffice. There should be an interval between two meals in which the stomach is empty, unoccupied. Even for this organ periods of activity should alternate with periods of rest, as is provided in Nature for *every* living creature. Plants have their physiological rest; the nervous system of animals is refreshed by sleep. Even the heart has its pause for rest during the diastole.

Therefore I cannot resist the impression that the fattening treatment, with its continual demand upon the digestive apparatus, with meals following one another in rapid succession, represents a process which is contrary to the laws of Nature, and which is more adapted for geese (who on that account fall sick of a fatty liver so palatable to us men) than it is for men, whom we wish to make not merely heavier but also more powerful and healthier and more capable of resistance.

In the Appendix of this book it will be shown that I actually succeeded in a considerable number of cases in carrying out successful fattening treatments without frequent meals and without the other compulsory measures which are gener-

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ally felt by those to be fattened as very disagreeable.

According to my opinion, in fattening treatments only three, or at most four, meals should be allowed, of which, however, only two consist of several courses: above all, for pedagogical reasons. Not a small number of our patients was accustomed to insert extra meals, to eat "something" in the morning, generally not little, and also to develop afternoon tea into an abundant meal. There are also some who take liquids (beer!) or solid foods late in the evening. These frequent eaters must be taught during the period of treatment to get along with few meals, since otherwise, at the end of the treatment, and after the cessation of medical supervision, they would eat their complete fill five or six times a day, which is more dangerous, under all circumstances, than if they do this only twice a day.

Many patients have already remarked themselves that it is better to be content with few meals. Still others have eaten only *three* times a day since they submit to the regulation of the household to which they belong. To prescribe new meals for these would certainly be absurd.

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Only rare exceptions remained in which I was forced to deviate from the rule. It was a case of people, almost without exception men, who, by virtue of their calling, were not in the position to observe the meal hours in general use; that is to say, who had the first large meal (noon meal) so far removed in time from the first breakfast that it would hardly have been feasible to refuse them a lunch at ten or eleven in the morning.

The objection will now be made that the sensation of hunger can be more easily banished by frequent than by infrequent meals. My experience contradicts this.

The sensation of hunger appeared with wonderful regularity at the hours at which a meal was taken on the previous days.

I myself am accustomed to take nothing between dinner and supper, and I feel, at the time at which many other men drink tea, absolutely no desire for food.

But when I take on two consecutive days (one day is not enough) tea with sandwiches, etc., on the next day I am reminded of the fact at five o'clock by a very substantial hunger that tea ought to

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be drunk now. Two days without tea suffice to restore the old status again. The desire for food no longer appears in the afternoon.

It is probable that many men have had the same experience. I know some who wake up at a certain hour at night, tormented by hunger, and take food, generally only a mouthful. A colleague, who had become undernourished as a result of disease, went so far in this respect that he consumed a complete meal, consisting of meat and several other courses, in the middle of the night between two periods of sleep.

I easily succeeded in weaning him from this, and in bringing him to adopt a more reasonable division of time for his meals, with much improvement in his health.

Nothing is easier than to accustom adults and children (this is well known of infants) to a certain new division of meal hours and another order of meals. The sumptuous first breakfast of the Englishman or American, consisting of meat and other things, is probably the first of the national customs which the German, who is much less exacting about his meals

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in the morning, adopts when he goes to England or America. It cannot be the climate which stimulates the appetite so early in the morning, for the climate of the eastern part of the United States is totally different from that of England, but the abundant breakfast in both places is pretty much the same.

Habit, custom, and occupation determine when and in what division the total of the food which is at the disposal of the individual is to be consumed.

I seldom found difficulty in eliminating superfluous meals. After from three to four days the patient became accustomed to the new order, and thereby an advantage was generally gained, which was of benefit even after the cure was complete.

Not a few of the heavy eaters among my patients before commencing the treatment suffered from various digestive disturbances (of which mention will be made in Chapter XX). I ascribe the fact that these troubles were almost always removed not in least measure to the restriction of the number of meals and the observance of sufficient intervals between meals. Not only the infant's stomach, but also that of

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the adult, should be filled again only when it has gotten rid of the previous meal.

The "normal" meals of my patients comprise: A breakfast, consisting of tea or coffee, some bread (with or without butter). When circumstances permit, one or, in exceptional cases, two eggs are added. Then dinner, consisting of several courses, and supper, which is more simply observed, yet which contains a meat dish, a side dish, fruit, and often still other "ballast" food. Polish and Russian patients like to eat, several evenings a week, only sour milk with bread or potatoes. This also makes a very commendable evening meal for the period of treatment. If there is an urgent desire for a cup of tea in the afternoon, it is granted. But a sumptuous meal with many rolls, cakes, sweets, etc., may never be taken at this time. Two or three Albert or similar cakes must suffice as a "bite" with tea.

I have had an experience with coffee which does not harmonize with the prevailing theory. It is usually taught that unsweetened black coffee possesses no nutritive value, and hence may be allowed

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quite indifferently and as freely as water. I have often tried this and have often been obliged to retract the prescription. The decrease in weight progressed better when little coffee or none at all was consumed. But there are very many cases in which the success is not disturbed by a cup of Mocha.

As already mentioned, a departure must frequently be made from the rule in the division of meals. Individualizing extends even to this point of the regulation of the treatment.

In many countries the greatest part of the population take their chief meal in the evening. Lunch is there a simple, "picked up" meal. Even with us and in Germany this order of meals is followed in many circles.

From the standpoint of the theory of nutrition, the conceptions of the small meal and of the large meal do not, to be sure, coincide with the sense which is generally ascribed to these words. The amount of nutriment does not depend upon the number of courses but upon the character and quantity of the foods of which the meal is composed. A breakfast of bread and meat may represent a more

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heartly meal than a dinner of ten courses.

I am wont to respect the old accustomed usage even during the treatment. I prescribe for those who have been accustomed to dinner in the evening a meal which consists of several courses (soup as introduction), and give them at noon a meal of simpler composition, which, however, is not to be inferior to the German noon meal in nutritive value. According to my experience, an insufficient meal (as the treatment requires this) is better borne in the evening by men who are working than in the middle of the day. The sleep, which is almost invariably very deep and quiet during the treatment, even in patients who were previously dissatisfied in this respect, helps best over this difficulty. Hence, as a matter of fact, the larger meal is to be transferred to noon, the smaller one to evening.

To be sure, there is generally no room for a third large meal, the English breakfast. I never encountered obstacles when I reduced the first breakfast to a modest measure.

Those who do no serious work all day and who wish to keep awake late in the evening may be allowed the more abundant

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meal in the evening, when they themselves state that they feel the "greater" hunger in the evening.

How far we have to depart at times from every pattern is shown by the following case:

No. XL, 50, a 34-year-old engineer, suffered in 1905-1907 from malaria in German West Africa. For 4 years has been in perfect health. Sedentary mode of life, almost no exercise, sleep at night 6 hours, 1 hour at noon. Inner organs without noteworthy findings, spleen not enlarged, blood-pressure 100 mm. Hg.

The patient weighed, in 1901, 95 Kg. By a strict self-prescribed diet he brought his weight down to 90 Kg., but very quickly increased his weight to 98 Kg., after the conclusion of the treatment. He came home from Africa, weighing 105 Kg. In 1910 again attempts at treatment: Diet, Müller system of gymnastics, much exercise of other kinds. Temporary decrease to 101 Kg., then a short standstill, and recent increase to his old maximum weight of 105 Kg.

Patient leaves his home early in the morning and comes home so late that he cannot take an abundant, warm meal until evening. His order of diet is the following:

Seven o'clock in the morning: Coffee, two rolls.

Ten o'clock: Double slice of bread and butter, two Zervelat sausages, often even more.

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Three-thirty P.M.: Coffee, two rolls, and black bread with butter or cakes.

Eight o'clock: Roast with potatoes and green vegetables, farinaceous food or cheese, much bread, fruit. Drink: Almost nothing but water. (Let attention be paid to the large amount of bread in the diet.)

A radical change in the division of the day and the meals was excluded. Therefore I prescribed the following unusual regimen:

Seven o'clock: 200 Gm. of coffee with milk (20 Gm. milk), one lump of sugar (5 Gm.), 40 Gm. of rolls.

Ten o'clock: 150 Gm. of Zervelat sausage, 100 Gm. of black bread, 10 Gm. of butter, 150 Gm. of apples or oranges, 150 Gm. of salt pickles, 80 Gm. of radishes.

Three o'clock: 200 Gm. of coffee with milk, one lump of sugar, 40 Gm. of rolls.

Eight o'clock in the evening: 130 Gm. of lean roast or 200 Gm. of poultry roast (including the weight of the bones), 100 Gm. of potatoes prepared without, or with only little fat, 140 Gm. of green vegetables (alternately spinach, kale, boiled lettuce, cabbage, cauliflower, green beans, green peas, carrots, kohlrabi, red beets), 100 Gm. of radishes, 200 Gm. of apples or oranges.

Only water as a drink, but this in unlimited quantities.

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The man, who was 174 cm. in height, weighed at the beginning of the treatment 104.90 Kg. A decrease in weight of 15 Kg. was fixed as the goal of the treatment. The further progress was as follows:

Date.	Weight.	Remarks.
November 29, 1911....	104.90	Beginning of treatment.
December 6.....	102.70	A slight feeling of hunger during the first days, later, no more. Stools without cathartics. Very much reduced in quantity. Pulse 68. Blood-pressure 90.
December 13.....	101.60	Perfect health, no hunger, slight constipation; Apenta water prescribed. Blood-pressure 100.
December 20.....	100.40	Euphoria. Stools again without cathartics. Pulse 68. Blood-pressure 100.
December 28.....	99.30	Pulse 72. Blood-pressure 100. One egg is added to the first breakfast.
January 3, 1912.....	99.00	Was travelling. Ate without weighing.
January 10.....	97.80	Euphoria.
January 17.....	96.30	Drank milk frequently on account of a bronchial catarrh.
February 7.....	94.80	Pulse 64. Blood-pressure 90. Perfect health.
March 14.....	93.00	Pulse 68. Blood-pressure 90. Patient no longer keeps exactly to the prescription.
April 15.....	91.30	Euphoria. Treatment concluded. Normal diet prescribed.

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The patient has not been obliged to neglect his exacting calling, even for an hour, during the treatment, and finds that the normal diet prescribed for him is a completely satisfying nutriment.

I have referred to this case in more detail in order to show that the goal can be reached even in more difficult cases (abnormal conditions of life, intricate divisions of meals, almost no exercise).

CHAPTER XVI

REPEATED mention has been made of the fact that a good obesity treatment cannot be a hunger treatment in the sense in which laymen understand the word. Had my patients continuously, or indeed daily, been tortured many hours by hunger, they would not have complied with my rules for months at a time.

In the oral and written report which I receive every week, and in which I always inquire after "hunger," an affirmative answer to this question was extremely infrequent. Few, except individuals with weak wills, especially neurasthenics, complain of hunger. During a treatment, correctly conducted, men with a sound nervous system feel hunger, as already mentioned, only *before* the meal, hence at a time when hunger represents a normal, one might almost say an agreeable, sensation. Only the first two or three days of the treatment, the transition period from the accustomed to the new regimen, are an exception. In this connection the con-

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sideration arises that at times meals must be entirely omitted. As we have already heard, hunger appears at the hour of the usual meal. Further, the first meals according to the plan of the treatment often do not quite satisfy hunger. In a not inconsiderable number of cases, on the contrary, the patients report that they had not been so well satisfied for a long time as during the treatment. They also suppose that they have increased in weight, and they are very agreeably surprised when they see that, on the contrary, they have undergone a considerable decrease in weight.

We can generally learn from the history which of the patients will be satisfied and even surfeited in the first days of treatment. They are the ones who themselves have attempted to decrease their body weight, or at least to keep it at the same height by a diet. For this purpose they have reduced the *volume* of their food *under the amount which the prescription of the treatment contains*. The nutritive value, on the contrary, was greater than that which my prescription required. The feeling of satiety depends, however, as

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already emphasized, primarily upon the volume of the non-liquid food, not on its nutritive value.¹

According to W. Ebstein, fats form an exception. This may indeed be correct. I myself and different persons whom I consulted with respect to this, however, perceived satiation with fats or very fat dishes not entirely as the accustomed normal satiation. A disagreeable after-taste clung to it, a more or less outspoken feeling of disgust, which awakens in many men the wish to remedy it by a glass of cognac, etc.

I attach value to satisfying my patients in such a way that I allow them a sufficient quantity of solid foods. Since fats, in a certain volume and weight, represent more nutritive value than any other food constituent, and since I, as many others, do not recognize a special advantage in fatty nutrition, compared with carbohydrates, I reduce the fatty content of the foods to a degree which is compatible with their palatability, and as far as the national or individual cuisine of the patient

¹ Milk, which coagulates in the stomach, must be considered solid food.

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allows. In particular I attach value to the meat foods being chosen from lean pieces, forbid fat sauces, try to replace the vegetables which are prepared with an excess of fat by ones with less fat.

The great significance of "ballast" food I have already emphasized in an earlier chapter. In a certain direction potatoes also belong to the "ballast" materials. They contain, on an average, 75 per cent. water and only about 20 per cent. starch, and small quantities of fat and albuminous bodies as nutritive constituents. Boiled in water or salt water or baked without fat, they may be allowed in quite large quantity (100 Gm. of boiled potatoes yield about 100 calories). But when prepared differently, they generally contain so much fat that this, not the potatoes, is the deciding factor in forming an estimate.²

This is true, and, what is more, in still higher degree, of vegetables, as spinach, kale, endives, and boiled lettuce, cabbage,

² Very recently reference has been made to the value of potatoes as an article of food on account of their high sulphur content. Almost without exception they have been included in my prescriptions. The new investigations will confirm me in this practice.

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cauliflower, celery, kohlrabi, green beans, green peas, turnips, and carrots. In general, they have little nutritive value (carrots, with 6 per cent. sugar, somewhat more nutritious than the others). The nutritive value of the prepared course depends in small measure upon the kind of vegetables, primarily upon the way in which they are prepared, whether with fat—of which they may contain great quantities—flour, sugar, and cream. The oxidative value of 100 Gm. of spinach can amount to 50 or even 250 calories.

Mushrooms, raw or preserved in vinegar, belong to the constituents of our diet which have little nutriment. But when they come to the table soaked in fat, whereby their original water content is very much reduced, they form an extremely concentrated article of diet. They are very well adapted to improve the taste of soups and sauces.

Express emphasis must be laid upon the fact that, so far as the treatment is concerned, nuts cannot be considered fruit. They contain about 65 per cent. of fat and are articles of diet which possess the greatest nutritive value in the smallest volume.

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100 Gm. of hazel-nuts correspond in nutritive value approximately to 1800 Gm. of tart apples.

There are also among the farinaceous dishes bulky and compact foods. To the former belong those fermented and those prepared with beaten white of egg, besides the "butter-dough" farinaceous dishes.

There is always an agreeable surprise when patients whose diet-prescriptions contain farinaceous foods weigh for the first time cakes or tarts, prepared with beaten white of egg. 100 Gm. are an immense portion; 100 Gm. of noodles, on the contrary, a very modest little amount.

In drawing up a diet schedule, we have to give heed to two properties of foods: the nutritive value, which is decisive for the success of the treatment, and the volume, which determines the factor of satiation.

We know already that the sensation of hunger appears at certain hours. These are the hours of eating on the days immediately preceding. But what happens now when the expected meal is not given? Each of us has already had this experi-

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ence. The hunger does not last continuously for hours at a time. After a certain time, which usually amounts to no more than an hour, it vanishes. If the meal which has been skipped is still set before us, the appetite develops during the eating, but does not generally attain the intensity which it otherwise possesses. Delayed meals are not consumed with a full appetite. Now, since we know that the appetite stands in the closest relation to the secretion of the gastric juice, the general rule follows—one which deserves special heed during the period of treatment—that the meals should be given at definitely established hours.

Several times it has occurred that the treatment has failed on account of the impossibility of doing justice to this demand.

I have already mentioned the fact that the feeling of satiation appears when a certain quantity of food, irrespective of the composition, reaches the stomach. The "adjustment" of the stomach can be influenced in either direction by education and habit. Heavy eaters feel satiated only when they can eat no more—when the

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stomach is tightly filled. After some days of treatment, however, the feeling of satiation appears earlier—that is, when the stomach is less filled. Moreover, it appears in a more agreeable form. Satiety “enough to burst” is accompanied by unpleasant sensations of tension, frequently even by belching.³

Training the stomach to temperance in the amount of food is a gain to the patient for all future time. He feels happy in the consciousness of being able to be agreeably satiated even with less quantities than before.

According to my experience, from 600 to 700 Gm. of solid food are enough to satiate a large and powerful man at dinner. In the case of small, delicate women the amount may, and often must, be reduced to 400 Gm. With our German order of meals the stomach is more easily satisfied in the evening, and two-thirds of the amount stated suffices to banish hunger.

It is important to know the following fact. Even when the feeling of satiation

³ In China, and, as I recently read, also in Albania, it is considered an insult to the host, a proof that the guest has not relished the meal, if he does not belch after eating.

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is not present at the conclusion of a scanty meal, it appears with certainty a few minutes later. A cigar or a cigarette helps many past the critical moment, which demands the exertion of some will-power.

But there is still another means of getting past this dangerous period: the prolongation of the time of eating, which, however, must not consist in the extension of the pauses between the single courses, but in the extension of the time which every single course demands for its disposal. This is attained by chewing every mouthful long and thoroughly. I might not, indeed, be wrong if I assumed that even before Hippocrates physicians urgently recommended to their patients thorough chewing of food. The proverb, "Well chewed is half digested," is very old. Nevertheless, a special impetus was still needed to bring chewing into "fashion." It is now called "Fletcherizing," and is the constituent part of a "system" which the American, Fletcher, discovered.

Fletcherizing consists mainly in spitting out every mouthful after "its soluble constituents have been extracted" by long

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chewing. Liquids must also be chewed. Thereby Fletcher gains absence of smell and substantial reduction of the mass of the feces, so that his followers are obliged to go to stool only once or twice a week! Defecation must occur in squatting position; this also belongs to Fletcherizing.

The choice of foods must be left to the taste of each individual, strengthened by education. Fletcherizing is said to have as a result a cure of the "morbid appetite" ("*Esssucht*"), and a strengthening of the organism.

I have had no experience with systematic Fletcherizing, and no occasion to observe it. I have never tried or permitted spitting out food. But one thing I find correct. Long and thorough chewing of food brings about a quicker appearance of satiation. A feeling of fatigue in the cheek muscles is associated with the feeling of satiety. The resolution to end the meal is thus made easier.

By prolonging chewing, we eliminate the dangerous pause, already mentioned, between the end of the meal prescribed by the treatment and the appearance of satiation. This influence of "partial

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Fletcherizing," as we will call thorough chewing, in order not to give up the wooing power of the fair name, will make the observance of the treatment prescriptions easier for many large eaters.

According to Pawlow's investigations, meat broth belongs to the most effective stimulants of the gastric secretion. Soup as the first course of a meal therefore stands in its proper place, even considered from the physiological standpoint.

But now soup, especially beef soup, belongs to the foods which are prohibited in many reduction prescriptions.⁴ Without any theoretical justification, I, on the contrary, recommend to each of my patients who feels no absolute repugnance to soup to begin his chief meal with this dish, and I believe I bring about an acceleration of satiety by the stimulation of the gastric secretion.

Clear beef soup without fat has no nutritive value of consequence, even if a few green vegetables ("Julienne soup," cabbage soup) are added. In my eyes, it would be an injustice to forbid this dish, which is relished by the great majority of

⁴ Not by Ebstein and Von Noorden!

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men and which is necessary to many for the formation of a regular noon meal.

In cases of "ravenous hunger" during the morning, which could not be removed by education, I gladly allowed the consumption of 150 or 200 Gm. of bouillon. It is to be had in many households in the late afternoon hours, or is saved from the previous day without losing in palatability and wholesomeness. The feeling of hunger is quickly appeased by a cup of soup.

Finally, this result can be attained by a very small quantity of chocolate, by fruit, etc. But I found clear beef soup to be the most agreeable to the patient and the most effective calming agent for the torturing hunger.

CHAPTER XVII

EVERY diet prescription should be made in writing, and every alteration should be written down in black and white, since otherwise incredible misunderstandings come to light.

Since I consider it suitable to train the stomach to be content with a quantity of food less than that to which it has been accustomed, I allow no food to be eaten *ad libitum*, not even such as must seem harmless, considered from the standpoint of the theory of nutrition. Otherwise it would happen too easily that on the days on which less harmless dishes come to the table transgressions would occur, because the feeling of satiety would be absent. This might disturb or do away with the success.

If the patient wishes it, and if the result of the previous week does not speak against it, I increase the quantity of this or that course a certain amount, but do not yield to every whim of the patient. In this respect it is easy to begin, but difficult to stop.

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In the prescription all foods are measured out according to weight. Only tea, which is to be put on a par with water, forms an exception. However, I determine the milk which may possibly be added, as well as the weight of the sugar used to sweeten the tea.

If the amount of the tea (and coffee) consumed in a day is slight, so that 20 Gm. of sugar are enough to sweeten it, it is sweetened with sugar; but if the tea is drunk much sweeter, the patient must use in place of the sugar, at least in part, saccharin or crystallose or saxin.

It is very important to measure out bread with the scales. A roll now weighs 40 Gm. in Vienna. A short time ago it still weighed 50 Gm. Even in Vienna, bakers' wares are found to vary in weight according to the part of the city from which they come. The four-heller roll in small cities, and especially in the country, is so considerably heavier that this fact cannot be overlooked. Prescription according to weight makes us independent of such differences.

All foods are weighed immediately before the meal, as prepared for the table.

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Since, as was demonstrated in the earlier chapters, I measure out the amount of food, not at all or not exclusively according to the nutritive value, but regulate it according to the result, I can also dispense with having the foods prepared from the weighed amounts of previously analyzed raw materials, or with examining the foods ready for the table, calorimetrically. This would also be hardly possible in carrying out the treatment in the home of the patient.

What is actually eaten is weighed. Bones or other inedible parts of the roast are removed before weighing, fruit peeled before weighing, the pits of stone-fruit weighed again and replaced by the meat of the fruit.

The only exception is made in the case of poultry roasts. Stripping the meat from the bones would be troublesome and unappetizing. Poultry is therefore weighed with the bones, and a special figure referring to this is inserted in the prescription. In the case of small chickens, pigeons, partridges, the weight in proportion to other roasts is increased 40 per

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cent.; in capons, ducks, geese, 20 to 30 per cent.

I attach value to the fact that the weighing be undertaken at the table by the patient himself or some member of his family. The staff of the kitchen often combine a generous heart and slight conscientiousness, and increase the portions without authorization, whereby naturally a gross source of error is introduced, which can ruin the success of the treatment.

Although it is well known to me that the different kinds of vegetables and the various farinaceous foods differ in their nutritive value, and accordingly should not be given in equal amounts by weight, I prefer to do this in order not to make the prescription entirely too complicated and to give the patient daily equally large quantities, when possible, equal volumes, hence to cause him to feel the same degree of satiation. The weekly result depends upon the average value of the food given daily. Whether one day or another contributes more or less to this value is of no consequence.

The patients ought not to determine their body weight oftener than once a

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week, for the reason just mentioned, and also because the water content of the organism can vary from one day to another by a more significant amount than the daily decrease in weight caused by loss of fat. In the case of my patients the variations of the water content can be very large, because I leave the consumption of water to the discretion of the patient. On days when spiced or strongly-salted foods are eaten, more water is drunk than on other days. The excess of water consumed can easily raise the body weight 500 Gm. higher than the day before. Now, if the patient has lost 150 Gm. of fatty tissue, his weight may appear 350 Gm. higher. The ascertaining of this fact, the significance of which the patient does not recognize or which is not present to his mind, irritates him unnecessarily. This harm is not entirely compensated even when the weighing on the second day following shows a decrease in weight of 650 Gm., which is composed of 150 Gm. of loss of fatty tissue and 500 Gm. of loss of water.

These disturbing influences make themselves much less conspicuous in weekly

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weighings. The losses of fat in a week are seven times as great as those ascertained daily, but the weekly variations in the water content are not greater than the daily ones.

This influence is not entirely eliminated. It happens, in spite of obedient conduct, that single weeks bring less loss of weight than was expected. The following week then brings compensation, but the average value of both weeks must be taken into account to judge the effectiveness of the treatment. These irregularities in the weekly result can be met to a certain extent if the patient is enjoined always to eat, on the day of weighing and on the day before, meals of the same composition.

Still another cause disturbs the uniformity of the weekly losses in weight: menstruation. During the days before the appearance of the menses the weight of most women, even when they follow the treatment conscientiously, is increased somewhat. This increase, which is probably due to the retention of water in the organism, and which even the women notice (they feel stronger, have more difficulty in lacing their corsets, their

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breasts swell), can amount to more than one kilogramme. It can completely conceal the simultaneous decrease in weight due to loss of fat, when the day of weighing falls upon the day of the appearance of the period or the first or second day before. The following weighing, then, generally shows an unusually large decrease in weight, since the water content of the organism within a few days reverts to its old measure, and the decrease in weight which follows at an interval of two weeks finds its full expression.

It would be demanding the impossible if our patients were required to follow the prescriptions for weeks and months at a time with absolute precision, and to avoid all "sins of treatment."

I have formulated my demands with respect to this on the basis of abundant experience as follows:

(1) In the first two weeks the treatment is to be carried out exactly, so that I can gain a correct picture of its efficiency and can judge whether or not changes in the prescription are necessary.

(2) When in the later course of the treatment two or more weeks produce an

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insufficient result, a "sinless" week is to be inserted, which enables me to decide whether the deviations from the prescription are responsible for the failure, or whether (on account of the decrease in weight, which has already appeared, and the consequent slighter food requirement) the form of diet is no longer suitable and must be replaced by another which is somewhat more restricted.

(3) All "sins" must be conscientiously confessed, since otherwise the physician loses every insight into the connection between change of weight and diet.

(4) Greater but less frequent excesses are less harmful than small but often repeated transgressions. Patients who eat several mouthfuls more than are allowed at every meal as a rule show no decrease in weight.

(5) Whenever possible, the treatment should be *strictly* followed on the day before weighing and on the day of weighing itself, since otherwise the increased contents of stomach and intestine can produce a considerable decrease in weight.

(6) The patients are to be taught that three or more days of relapse into the old

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accustomed mode of life will cause the days conforming to the schedule of the treatment, which follow, to be again attended by hunger. They have made the treatment difficult for themselves, because the stomach must be trained anew to decreased filling or even to omission of single meals. Therefore in the extremely large majority of cases it is to be recommended that the treatment be completed in *one pull*.

(7) No cure without scales. Ocular measurement is unreliable, nor is it as incorruptible as the scales.¹

¹Only twice in my practice have I seen successful treatments carried out without the use of the scales. In the first of the two cases an unusually energetic woman, who, by virtue of her position as lady at court, could not use the scales at the majority of her meals, succeeded in carrying out a cure in normal time with a decrease of 15 Kg. She ate of the abundant fare which was offered her exactly as much as the prescription allowed. She had the quantities of the different foods permitted weighed off before the meal, and impressed them so well upon her memory that she hit the mark. The circumstances were similar in the second case.

CHAPTER XVIII

EVEN infants may become too fat from overfeeding, and may suffer many disturbances of health from this abnormality. Then the number of the daily meals and the duration of every single breast meal or the quantity of the artificial food is reduced, and thereby an improvement is gained,—that is, an increase in weight corresponding to the growth in height. Hence, even here we might speak of an obesity treatment. If in the meantime the conception of the word is limited so that an actual *reduction of the existing weight* is understood by it, the lower boundary at which such treatments are to be undertaken is to be placed at about the twelfth or thirteenth year in the case of girls, somewhat higher in the case of boys. In the case of still younger children it is enough to maintain the body weight at a constant height by suitable dietetic prescriptions, or at least to convert the rapid rise into a *slower one*, in order to reach

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the goal,—that is, to bring the body weight into a proportion to the height which corresponds somewhat to the normal: provided that the children grow. If obesity and the repression of growth appear in union, as in myxœdema, then, as a matter of course, etiological treatment—in myxœdema, the administration of thyroid extracts will be ordered. (This only incidentally.)

Some typical mistakes in nutrition give rise to the appearance of obesity in otherwise entirely healthy children.

Many parents are not able to go far enough in the choice of foods which have, or are said to have, the very greatest nutritive value. What portion of meat is the most nutritious, and what mode of preparation increases the nutritive value still more, form the subjects of their studies. That they can also go too far in this, that an excess of food also works harm, they do not notice until their round darling is the object of the ridicule of his fellow-pupils or playmates.

The two most frequent causes of over-nourishment of children are:

- (1) An excess of meat.

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(2) An excess of bread, with or without butter.

Compared to that, all other constituents of the daily food, sweets included, retire into the background, although, of course, the effect is determined by the total of all the articles of diet. As we have already seen, a child can devour bread in kilogrammes, while it indeed seldom received more than 50 Gm. of chocolate or other sweets in a day. But in nutritive value this amount is about equal to 100 Gm. of bread.

On the day on which I write this down, 13-year-old twins (girls) were brought to me, who weighed respectively 73 and 72 Kg. The children got meat to eat five times a day. This is a *gross* case of meat-fattening. To give meat three or four times daily instead of once or at most twice seems especially suitable to many parents. Let it be emphasized here, by way of parenthesis, that ham belongs to the meat species. Many laymen do not seem to know that, but regard ham as an article of diet *sui generis* which cannot be given to children often enough.

With the aid of the body and food

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scales we succeed, as a rule, and without difficulty, in keeping younger children for some time at the same weight, or at least in checking the further rapid increase in their weight.

Reduction of the amount of meat to the permissible degree and restriction of the consumption of bread are the most important measures which enter into consideration in this connection. As a matter of course, such children will be made to take physical exercise.

I have brought about actual reductions in weight in the case of girls from 12 to 13 years of age and of boys from 15 to 16 years of age.

In the case of girls it is also a question of promoting the development of a normal shape of the breasts. The skin over the breast glands is at times, not always, a favorite place for the deposition of fat in the case of both sexes. Even in young men fat is often located there, so that at times a formation very similar to the female breast appears.

But in the case of girls the simultaneous development of the glandular substance and the deposition of fat in the sub-

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cutaneous cellular tissue may develop over-large breasts. The skin which covers them is distended and finally shows the reddish streaks which are observed at other times in the distention of the abdominal skin by pregnancy or large tumors.

So long as the cushion of fat is retained, the appearance of the breasts is not so bad. But when the fat disappears as a result of sickness or obesity treatments, the skin becomes too wide; ugly pendulous breasts are developed.

I consider it a grateful and not impossible task of the surgeon to remove the superfluous skin and to restore a more pleasing form to the breasts. But so long as this part of cosmetic surgery is not perfected, care will have to be taken that enormous masses of fat be not deposited in the cellular tissue over the breast gland; that an obesity treatment be taken in hand in due time in young girls who have this easily recognizable morbid disposition, and that a later recurrent addition of fat be hindered by constant surveillance.

I brought about very successful cures in more than 30 cases in girls at the ages

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of 13 to 16 years, and I prevented the appearance of the beauty blemishes described. Without exception, the cases were young creatures who did not suffer from chlorosis and who had a radiant appearance. Menstruation was of different types. There was generally some disturbance present; the absence of menses for months or even years was often observed. Several of the patients were referred to me by gynæcologists, who believed that the reduction of flesh would serve as a means of awakening menstruation or bringing it back.

It is, indeed, generally known that obesity is usually combined with disturbances of the generative glands and of menstruation, most frequently with amenorrhœa. In the majority of cases a correctly conducted obesity treatment regulates this function, as will be shown more fully in a later chapter. Let it only be pointed out here that absence of the menses without chlorosis (normal hæmoglobin content) ought to incite us to undertake an obesity treatment, not prevent us from doing it.

Since in an obesity treatment we cannot

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dispense with the coöperation of the patient, it will be necessary in determining the duration of the treatment also to take into consideration his physical nature and development.

A certain degree of maturity, whose expression consists in the fact that eating no longer represents the end and object of life, a little strength of will, and a little vanity, must all be present. In the case of corpulent children, who are not affected by the chaffing of their comrades, we must wait until they become older, until they themselves express the wish to appear like their companions of the same age. But even in the case of young people there is no danger in a slow and cautiously conducted treatment.

No. XL, 48, a 13½-year-old girl, came under my treatment at the end of 1911. Her father is corpulent. She herself came to the world weighing 4 Kg., and has been too fat her whole life. Typhoid three years ago. Her weight began to mount rapidly during convalescence.

She is *always* hungry, bowels regular with cathartics. For three months menses every 23 days. Patient is characterized by the mother as lazy, although she takes gymnastic exercises

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and takes a daily walk of an hour. Sleeps nine hours.

Diet before treatment: Seven o'clock: Coffee or tea, two lumps of sugar, one roll.

Ten o'clock: Graham bread, 50 Gm. of sausage, one apple.

One-thirty o'clock: Soup, meat, vegetables, graham bread, fruit. Farinaceous foods at times instead of soup.

Five o'clock: Coffee and a "Zuckerkipferl."

Eight o'clock: Roast with side dishes (often preserves) or cold meat, graham bread. Every day a loaf of graham bread costing 20 hellers is eaten. Her family believes that this sort of bread does not fatten.

The girl has fat breasts; the gland tissue is very little developed. A regular "hump of fat" has a very disfiguring effect. On account of large masses of fat the neck seems to be much too short in the back. The arms are enormously fat.

Height at the beginning of the treatment, 161 cm., weight (with clothes), 72.90 Kg.

It is decided to reduce the weight by about 10 Kg. and to regard every centimetre of growth in height during the treatment equal to a decrease in weight of 1 Kg.

After some corrections the following diet proved to be the suitable one with which to attain a decrease in weight, proceeding at the proper rate and with the least hunger.

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In the morning: Tea, two teaspoonsful of milk, two lumps of sugar, 40 Gm. of rolls, 15 Gm. of Emmentaler cheese, 150 Gm. of apples.

Noon: 150 Gm. of beef soup with little solid constituents, 90 Gm. of lean roast or beef or 130 Gm. of chicken, 140 Gm. of green vegetables, 50 Gm. of farinaceous foods, 100 Gm. of apples, no bread, water *ad libitum*.

Five o'clock: Tea, two teaspoonsful of milk, two lumps of sugar, 20 Gm. of rolls.

Evening: 100 Gm. of roast or 140 Gm. of chicken, 100 Gm. of lettuce or cucumbers, 200 Gm. of apples or pears or oranges, no bread; or: 80 Gm. of cold meat and 40 Gm. of bread and butter, 200 Gm. of fruit.

Course of weight curve (in abstract):

November 19, 1911.....	72.90 Kg.
November 27, 1911.....	71.45 Kg.
December 18, 1911.....	70.00 Kg.
January 16, 1912.....	68.40 Kg.
February 13, 1912.....	66.70 Kg.
March 19, 1912.....	65.80 Kg.

The treatment is concluded and the patient dismissed with a normal diet. She presents herself repeatedly, the last time on May 21, and she weighed then 65.25 Kg. Her height is now 165 cm. Therefore since the beginning of the treatment she has grown 4 cm. in height.

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Except for the first three days of the treatment, she never complained of hunger, was well satisfied with her meals, and appears in radiant health.

The menses appeared on November 20, December 14, January 17, February 20, March 16, April 19.

The bowels had become somewhat more sluggish. On that account a wineglassful of Apenta water was given her once or twice a week.

Her figure now corresponds to that of a girl who is healthy, large, but with a perfectly normal figure. The hump of fat has completely vanished, the neck has become much longer, and the arms are several centimetres thinner. The change of appearance *in toto* is so significant that the decrease (7.65 Kg. with an increase in height of 4 cm.) would be considered much greater than it actually is.

The observance of the normal diet is not difficult for the girl, so that I consider a permanent success certain.

I was able to record a well-established permanent success in the case of a girl 19 years old. I intend to state this case only briefly, because the indication for under-

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taking the treatment was not beyond doubt. That is to say, there were huge but well-rounded breasts, and it seemed certain that the treatment would reduce these materially in extent and weight and also in turgescence. The girl was 170 cm. tall and weighed 104 Kg. The consciousness that she was ill-shaped had such a depressing effect upon her spirits that she evaded every contact with men, and especially could not be induced to take part in social pleasures, which were open to her in great abundance.

She lost 22 Kg. in a treatment lasting 20 weeks which was very easy for her. Her form was now that of a buxom, but by no means abnormal, girl.

The feeling that she no longer struck people as a prodigy was her salvation. Even before the conclusion of the treatment she began to attend balls, soon became engaged, and has now been for many years a happy wife and mother of several children. I have not seen her for a long time, but know that she has remained slender.

The upper age limit at which patients are fit for obesity treatment cannot be

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drawn. One of the most experienced Vienna physicians has repeatedly sent me patients who had passed their sixtieth year, and who then regained so much in working efficiency and activity by a treatment, carried out without any delay, that they themselves characterized it as a rejuvenating cure. More than 20 Kg. was removed in one of these cases.

A 65-year-old patient, whose active spirit suffered a forced physical inactivity because of her great weight—she could only cover short stretches of level ground—reported to me, after completing the treatment, that she could now master very steep mountain paths again (saddle between Altausee and Grundlsee) with the greatest ease.

Twice I have successfully treated 70-year-old patients, a gentleman and a lady, who suffered under the combined effect of obesity of high degree and a (compensated) heart lesion. In both cases the patients, who were hardly able to get to my office in rolling chairs, were put on their feet again.

But the age record of my patients is held by a woman who was no less than

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80 years old when she called upon me to submit to a reduction treatment. The chief motive which led her to seek me was—female vanity. She said she could no longer look at herself in the mirror since her weight, which had previously amounted to no more than 80 Kg., had risen to 97 Kg. Diminished activity occupied only a second place as a motive for her resolution. After I had convinced myself that no psychosis was at hand, I attempted, first in jest, then in earnest, to dissuade the lady from her purpose, but encountered the most energetic opposition. My refusal to assist her made her angry, and she solemnly declared that she would carry out the reduction by a very radical hunger treatment or by means of a borrowed diet prescription. By refusing to give her advice I would have made myself responsible for the termination of the affair.

I repeatedly found myself in similar situations when women (the same thing does not occur in the case of men), who are certainly not excessively heavy, wish to reduce. As a matter of course, such wishes must not be complied with. I

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failed in only one case to dissuade the lady from her foolish purpose by persuasion, and by exhibition of the table which contains the correct relation between body weight and height. A woman well along in the forties, who was 15 Kg. too light, whose arms, legs, and upper body consisted chiefly "of skin and bones," could not be convinced. She came again and again. She said that on the lowest part of her back fat had collected which absolutely had to "go." Now in this case I considered it necessary, in the interest of the mental composure of the patient, to follow out a dietetic prescription. I did not see the patient again from that time on, therefore I do not know whether she has followed my prescription. In my opinion, she might have attained a steady increase in weight with it. I gave her a good piece of advice against her will.

But the case of the 80-year-old lady was different. She was actually too heavy. Aside from her age, there was no contraindication, and so I decided to make a very cautious attempt. I gradually restricted the diet, "feeling my way" (with the

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scales), until a decrease in weight made its appearance.

The total loss amounted to 7 Kg. in 9 months. She never complained of hunger and was in perfect health.

Many of my patients considered the treatment a happy event in their lives; the octogenarian was one of the happiest of all.

I would therefore answer the question: At what time of life are obesity treatments permissible? In the case of girls, 12 to 13 years; in the case of boys, 15 to 16 years. The upper limit cannot be determined.

CHAPTER XIX

IT is a fact generally known that a considerable part of the obese people die of apoplexy. In families in which obesity is of frequent occurrence (there is an hereditary form of this affection) sudden death can be recorded much more frequently than among the rest of humanity. I have often heard in the histories of people in whom obesity was hereditary: "My father, from whom I inherited the trouble, grandfather, father's brothers, all died of apoplexy."

Whether the number of apoplectic strokes is less among those who do not inherit obesity than among those who do, I do not know, but I suppose, on the basis of blood-pressure measurements, that no substantial difference exists in this respect.

Obesity also belonged to the "apoplectic habit" of the old physicians.

Not merely hemorrhage of the brain, but also sudden heart-failure, as is well known, frequently occurs among stout people.

The tendency to these kinds of death

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can be diagnosed, if not without exception, yet very frequently, by taking the blood-pressure.

As the inventor of the tonometer, one of the two instruments for the measurement of blood-pressure, I have since the birth-year of this instrument industriously practised this method of investigation, the indispensability of which is to-day generally recognized. The blood-pressure is determined in every one of my patients. If the first investigation shows abnormal conditions, the measurement is repeated at every recording visit, but otherwise only at greater intervals.

Now, it has been shown that high blood-pressure values occur *very frequently* in the case of obese people, certainly incomparably more frequently than among men of the same age with a normal amount of fat.

The following table, which includes 100 consecutive cases from my practice, clearly teaches that absolutely normal values occur only in 54 per cent. of the cases. Moderately increased blood-pressure (115-140 mm. Hg) in 27 per cent., and high blood-pressure, 140 mm. Hg. or over, in 19 per cent. of the cases.

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I am able to give no definite information as to the causal connection between obesity and high blood-pressure. But that this connection actually exists is taught not merely by the frequent coincidence of both disturbances, but with much greater certainty by the fact *that the blood-pressure can be reduced without exception by an obesity treatment*. Not seldom in the course of the treatment the blood-pressure sinks to the normal.

Number.	Sex.	Age.	Weight, Kg.	Height, cm.	Blood-pres- sure, mm. Hg.
1.....	F.	32	114	161	165-115
2.....	M.	43	90	172	108
3.....	M.	26	100	169	140
4.....	F.	31	82	164	115- 90
5.....	F.	23	116	156	105
6.....	F.	48	121	175	115
7.....	M.	57	89	174	118
8.....	F.	45	117	171	125
9.....	F.	36	85	166	100
10.....	F.	32	89	160	120
11.....	F.	42	103	160	110
12.....	M.	49	103	170	200-155
13.....	F.	39	83	160	85
14.....	F.	34	64	155	110
15.....	M.	48	105	177	100
16.....	F.	60	99	160	170
17.....	F.	16	77	167	165-130
18.....	M.	32	75	153	110
19.....	M.	67	90	168	165-120
20.....	F.	37	82	157	105- 95
21.....	F.	34	97	171	110
22.....	M.	34	92	176	120

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Number.	Sex.	Age.	Weight, Kg.	Height, cm.	Blood-pres- sure, mm. Hg
23.....	F.	38	73	157	100
24.....	M.	34	105	174	100- 90
25.....	F.	19	101	174	105
26.....	M.	35	90	176	115
27.....	F.	30	84	163	115
28.....	F.	46	102	170	105
29.....	F.	32	71	165	100
30.....	F.	44	84	166	100
31.....	F.	51	91	153	120-100
32.....	M.	53	133	181	120
33.....	F.	40	73	153	95
34.....	M.	32	85	171	117
35.....	M.	36	106	180	115
36.....	M.	40	88	177	110- 95
37.....	F.	38	100	166	85
38.....	F.	47	96	166	120
39.....	F.	32	75	161	90
40.....	M.	50	106	176	90
41.....	M.	31	102	169	120-100
42.....	F.	33	117	162	130-100
43.....	F.	52	79	163	140-100
44.....	M.	46	90	169	110
45.....	F.	42	89	165	100
46.....	F.	52	69	160	110
47.....	F.	24	86	171	120
48.....	F.	28	90	164	110- 90
49.....	F.	46	78	163	100
50.....	F.	31	69	159	110
51.....	F.	44	89	158	110
52.....	F.	26	106	176	116-100
53.....	F.	48	78	159	90
54.....	M.	44	96	176	150-108
55.....	F.	28	76	165	90
56.....	M.	66	97	173	200
57.....	F.	40	84	166	130-100
58.....	F.	32	74	158	110
59.....	F.	30	96	162	100
60.....	M.	29	86	173	92
61.....	F.	45	76	155	95
62.....	F.	30	101	178	90
63.....	F.	17	84	167	140

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Number.	Sex.	Age.	Weight, Kg.	Height, cm.	Blood-pres- sure, mm. Hg.
64.....	F.	20	82	162	95
65.....	M.	39	83	171	110
66.....	F.	40	94	170	110
67.....	F.	41	94	175	116
68.....	F.	45	95	155	105
69.....	M.	31	111	181	115
70.....	M.	53	87	175	140-118
71.....	M.	47	93	175	105
72.....	F.	42	103	155	145-100
73.....	M.	36	88	170	90
74.....	F.	37	81	160	100
75.....	M.	35	84	174	100
76.....	F.	20	76	158	95
77.....	F.	45	92	160	100
78.....	F.	55	74	157	140- 95
79.....	F.	52	80	161	135-115
80.....	M.	66	114	170	145-118
81.....	M.	44	81	174	150-120
82.....	F.	27	80	159	110
83.....	F.	30	95	153	100
84.....	F.	49	129	151	175
85.....	F.	38	100	165	100
86.....	F.	22	115	170	130-115
87.....	F.	38	72	159	180-110
88.....	M.	35	95	174	100
89.....	F.	28	90	171	120
90.....	F.	42	93	167	140-128
91.....	F.	53	98	159	150
92.....	M.	39	105	181	115-100
93.....	F.	26	96	165	130
94.....	F.	23	92	157	110- 95
95.....	F.	30	84	162	115
96.....	M.	48	89	174	110
97.....	F.	52	135	164	120
98.....	F.	34	92	165	115
99.....	F.	37	99	159	110
100.....	F.	40	107	173	100

The second figure in the column "blood-pres-
sure" gives the pressure in the course or at the

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end of the treatment. Its absence signifies that repeated measurements were impossible.

Even among the 100 cases contained in the table, 20 can be found in which the treatment brought about a substantial diminution in the blood-pressure.

- No. 1 shows a fall of 165 to 115.
- No. 12 shows a fall of 200 to 155.
- No. 17 shows a fall of 165 to 130.
- No. 19 shows a fall of 165 to 120.
- No. 31 shows a fall of 120 to 100.
- No. 36 shows a fall of 110 to 95.
- No. 41 shows a fall of 120 to 100.
- No. 42 shows a fall of 130 to 100.
- No. 43 shows a fall of 140 to 100.
- No. 54 shows a fall of 150 to 108.
- No. 57 shows a fall of 130 to 100.
- No. 70 shows a fall of 140 to 118.
- No. 72 shows a fall of 145 to 100.
- No. 78 shows a fall of 140 to 95.
- No. 79 shows a fall of 135 to 115.
- No. 80 shows a fall of 145 to 118.
- No. 81 shows a fall of 150 to 120.
- No. 86 shows a fall of 130 to 115.
- No. 87 shows a fall of 180 to 110.
- No. 90 shows a fall of 140 to 128.

In judging these statistics, it is to be well noted that in many of the patients

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who came under my treatment with high pressure values, no decrease in these were observed, because the patients did not appear again, whether because I lost sight of them entirely, or whether because they sent me later only written reports and blood-pressure measurements were not taken by the family physicians.

In the cases which I could personally record, the diminution of the blood-pressure appeared *without exception*, and could be noticed after the expiration of the first week of the treatment—at the latest, in the course of the second week of the treatment. The fall in pressure was rapid at first, and then became gradually less sharp. As already mentioned, it was never absent, not even in cases in which a complication of obesity with hardening of the arteries, or with contracted kidneys, was present.

It seems to me that no slight significance is to be attached to this observation, since no other way is known, either in literature or in our own experience, by which to lower the blood-pressure so vigorously with certainty and for a long time.

My experience taught me that blood-

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pressure remains low so long as the patients observe the diet of the treatment and the subsequent normal diet. But it rises again as soon as they eat more than is necessary to maintain a uniform weight.

A faithful patient who, contrary to my intentions, has been taking an obesity treatment every year for six years, because he cannot bring himself to follow¹ the prescribed diet after the conclusion of the real period of treatment, constitutes a voluntary object of experiment for the relations discussed here, and one which cannot be rated high enough.

Every spring he makes his appearance because his weight has risen to about 100 Kg. in the meantime, and he begins the treatment every year with a blood-pressure of about 150 mm. Hg. The prescription is followed with great conscientiousness, the weight falls from 10 to 14 Kg., and the blood-pressure *almost to the normal*.

Slight but nevertheless unmistakable indications of an incipient cardiac insufficiency as a result of greater exertions

¹He takes long trips which lead him to America every year. On the way, however,—that is, during an ocean voyage,—it is hard to remain moderate in diet.

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(dyspnœa and palpitation of the heart during the more rapid climbing of mountains or steps) disappear along with the diminution of the blood-pressure, which, as usual, takes place very quickly in the beginning of the treatment and at a time when the decrease in weight has not yet proceeded far enough to give a sufficient explanation in itself of the improvement which the patient perceives in his activity. While patients with normal or slightly increased blood-pressure do not usually perceive the benefit of the unloading of weight until after several weeks of the treatment, it can be considered the rule *that patients with high blood-pressure can report a regular revolution in their health even after a few days.*

They walk freely again, can also ascend mountains or climb stairs, and they sleep better.

If we take into consideration the fact that the reduction of the blood-pressure from 200 mm. Hg to 150 signifies an unloading of the heart by 25 per cent., we will find the improvement of the subjective health intelligible. But we could not comprehend, without knowledge of the blood-

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pressure, why a man who weighs 120 Kg. and can no longer climb stairs regains this ability as soon as he has reduced his weight to 118 Kg. The diminution of the blood-pressure, perceptible in the first days of the treatment, furnishes the key to the comprehension of this accompanying phenomenon, which is a godsend for the patient.

Many a patient had to rejoice more over the reduction of the blood-pressure than over the reduction of the body weight, since the former increases his working efficiency still more than the latter.

I can propose only suppositions as to how the reduction of blood-pressure proceeds, because nothing definite can be asserted as to the connection between obesity and hypertension.

It might be supposed that the viscosity of the blood would be diminished by the treatment, and friction-obstacles between blood and vessel wall reduced.²

This would not be difficult to ascertain in the hospital or sanatorium. But

² Georg Hirt, in his "Parerga zum Elektrolytkreislauf," München, 1912, expresses a similar opinion.

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hitherto I have found it impossible with my *clientèle*, which consists of walking patients.

Perhaps the unburdening of the gastric and intestinal canal in the case of men who pass from immoderate eating to very moderate consumption of food enters the question. This manifests itself even in the first days of the treatment, also in other ways, by diminished tension of the abdomen, disappearance of the bloating, etc. Dr. S. Federn, the indefatigable champion of clinical blood-pressure measurement, has again and again emphasized the significance of the sympathetic nervous system with relation to the blood-pressure of men. This C. Ludwig and his pupils established in animal experiments.

I have already mentioned that the great fall in weight of the first days is based in considerable part upon the dehydration of the organism. If now the blood takes part in this process, this would be equivalent to a diminution of the total blood mass, and this might then reduce the blood-pressure like a bloodletting, but

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with the difference, to be sure, that in bloodletting, which only has a temporary effect, the blood mass is quickly regenerated, while the dietetic treatment creates conditions which last as long as the treatment itself.

Since the recognition of the great influence of the suprarenal capsules and other glands with internal secretion upon the blood-pressure, the number of possibilities which have to be heeded in this case has become still greater. The possibility would not be excluded that the altered diet may also influence the function of these organs in the sense that a lowering of the blood-pressure results.

The blood-pressure is often seen to sink steadily in the later stages of a "great" treatment. The following clinical histories furnish an example of this kind. I cannot rid myself of the impression that the disappearance of great masses of fat had a direct participation in the lowering of the blood-pressure.

The blood-pressure must be so high that all organs receive as much blood as is necessary to maintain their individual life.

OF OBESITY

A complete interruption of the circulation, as well as a continuously insufficient blood supply, involves death, necrosis of the affected organ or part of the organ, also that of the fatty tissue.

The demands upon the blood supply made by the vital organs, for example the kidneys (here we should probably exclude fatty tissue), are much greater. The kidneys must obtain as much blood as is necessary to maintain their functional activity. If a part of the kidney tissue is destroyed, the remainder must accomplish all the work which the complete organ formerly accomplished. Compensation is brought about by extension of its own vascular system, and, if this does not suffice, by increase of the arterial blood-pressure. Organs not concerned can protect themselves against the inundation by contraction of their own blood-vessels. I do not consider the possibility excluded that in case of great obesity blood-pressure is increased by an unknown regulatory influence, and that thus provision for sufficient supply of blood is created for the tissues extremely deficient in vessels. Dis-

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appearance of fat would then exert the opposite influence—the decline in the height of the blood-pressure actually observed.

The correctness of this hypothesis might be studied in animals, who can easily be fattened.

The following clinical histories, which I could supplement by numerous others, teach the connection between reduction of weight and the lowering of high blood-pressure:

No. XXVI, 23, the 50-year-old trainer and racing driver, was born in America, but has lived for many years in Vienna. I have already mentioned him. Father and mother each weighed over 200 pounds. He himself weighed 84 Kg. at the age of 20, and his weight increased from that time at the rate of about 1.5 Kg. a year. Five years ago, after a fall from his vehicle, attacks of vertigo, repeated occasionally. Cardiac dulness on the right side a little extended (middle of sternum), cardiac sounds clear, second aortic sound accentuated. Patient does not smoke, and abstains from alcohol. Recently short of breath during quick walking or other physical exertions. No complaints about stomach. Bowels somewhat constipated.

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"American cathartic pills," therefore, used. Sleeps 9 hours, quietly. Patient walks daily 7 to 8 km. and drives 5 to 6 hours, often with young horses. Intense muscular exertion is involved in this occupation. The muscles of the hands and arms are those of an athlete.

Diet up to this time:

Seven o'clock in the morning: Coffee, one roll.

One-thirty o'clock: Soup, roast, vegetables, farinaceous foods occasionally, one roll, water or tea.

Two o'clock: Coffee with cream, milk bread.

Seven o'clock: Cold meat, one roll, butter, pastry and preserves, lemonade with sugar.

Height, 168.5 cm.

The man is put on the following diet:

Seven o'clock: 250 Gm. of weak coffee, two lumps of sugar, 50 Gm. of white bread.

Twelve o'clock: 200 Gm. of bouillon, 150 Gm. of beef or lean roast, 220 Gm. of green vegetables, 200 Gm. of apples, water *ad libitum*.

Two o'clock: 150 Gm. of weak coffee.

Seven o'clock: 140 Gm. of lean, cold meat, 150 Gm. of cucumbers, salad, or American preserves with little sugar, 40 Gm. of bread (dropped beginning January 19th), 20 Gm. of cheese and 150 Gm. of apples, water or unsweetened tea *ad libitum*.

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Date	Gross weight, Kg.	Blood-pressure mm. Hg.	Remarks.
December 8, 1906...	111.30	180	Beginning of the treatment.
December 15.....	106.50	155	Only in the first days a little hunger, later absolutely perfect health; breathes much more easily.
December 22.....	105.40	140	Good health; more active.
December 29.....	103.85	130	Good health.
January 12, 1907...	101.80	...	Good health.
January 19.....	101.10	130	Good health.
January 26.....	100.20	...	Good health.
February 9.....	98.20	115	Good health.
March 23.....	96.50	115	On March 17th, drove the first race of the year with brilliant results.

As can be seen from the table, the blood-pressure has decreased in the course of two months 65 mm. (from 180 to 115 mm. Hg).

No. XXXIII, 42, patient is 54 years old, cook. Her mother was obese and died of an apoplectic stroke. Three years since the menopause; since then the weight has grown rapidly, 7 Kg. in the course of last summer. Patient complains of pains in her legs. Legs refuse to work. In walking, even on level ground, dyspnœa and palpitation of the heart. Her occupation forces her to stand for hours at a time. This also is very difficult for her. Complete inability to follow her occupation seems to be close at hand.

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She comes to me on November 10, 1908, upon the recommendation of her family physician.

Former diet: Morning: Coffee without bread.

Noon: Meat, vegetables, and a little farinaceous food.

Five 'clock: Coffee without bread.

Evening: No real meal. Foods intended for her employers are only "tasted." As a drink, only water.

Second aortic sound accentuated, otherwise no noteworthy findings. No albumin in urine.

The weight of the patient, who is only 152 cm. in height, amounts to 101.80 Kg.; is, therefore, 45 Kg. too high.

The clinical history is instructive. By hearing or reading, the impression could easily be obtained that we have to deal with a person who takes very little food, and who has done everything possible not to become fat. Only one single, "regular" meal, and even at this the dreaded farinaceous foods only "tasted"! The consumption of bread is altogether disclaimed. The inexperienced man could easily arrive at the assumption in this case that he had a case of very sluggish tissue-change to deal with, which could not be affected by prescriptions usual in other cases. We are really not in a position to

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restrict the diet more than this patient has done herself, or believes she has done.

Experience taught me that in measuring out food we have to be guided by very many circumstances. The statements of the patients, especially of women, as to their earlier scanty nutriment are, however, not to be heeded, and directions are to be given as though we were quite sure that the patients had eaten too much hitherto. In the case under discussion the professional tasting of the foods might have given us the clue. In other cases it is false statements, often direct self-deceptions, which, for example, consist in the fact that single days of especially scanty diet are given as the normal ones.³

The case of "alleged" abstemiousness in the consumption of bread forms a rare exception. But the statements are usually most unreliable precisely in this point. The remembrance of eating bread is frequently buried in our subconscious mind, and must be brought out by a thorough inquisition.

³ I met with the most extreme example of this kind in the case of a lady who stated that her only food in the last months had been three cups of unsweetened tea a day. She carried out a successful normal treatment.

OF OBESITY

I prescribed the following diet:

Morning, 6.30 o'clock: 200 Gm. of coffee with milk, one lump of sugar.

Eleven o'clock: 150 Gm. of clear beef soup.

Two-thirty o'clock: 90 Gm. of beef or roast, 150 Gm. of green vegetables, 50 Gm. of farinaceous foods, 150 Gm. of apples, no bread.

Five o'clock: 100 Gm. of coffee with milk, one lump of sugar.

Eight o'clock: 100 Gm. of lean roast or 80 Gm. of cold meat or sausage or dish composed of two eggs, 40 Gm. of rolls, 150 Gm. of apples or cucumbers; as a drink, water *ad libitum*.

The progress of the treatment can be seen from the following table, given in abstract:

Date.	Weight in clothes.	Blood-pressure	Remarks.
November 10, 1908.	101.80	170	Beginning of treatment.
November 17.....	99.30	160	Respiration freer.
December 2.....	96.70	...	Euphoria.
December 22.....	94.30	150	Pains in the legs are materially better. Sleep much better than before.
January 20, 1909...	92.30	120	Patient became ill with influenza during the last few days; now well again.
February 26.....	85.50	130	Euphoria. Normal diet prescribed.
December 1.....	84.80	130	Complete euphoria and ability to follow occupation.

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I saw the patient again on November 30, 1911. She had kept the same weight for a year. Since then slow increase. The pains in the legs become perceptible again; at times slight attacks of vertigo. The condition of her health in other respects, and the ability to follow her occupation, have remained good. She comes to me in order to meet in due time further increases in weight and the troubles connected with that.

In a regimen which has been only unessentially modified as compared to the one last prescribed, I record:

Date.	Weight, Kg.	Blood- pressure, mm.Hg.	Remarks.
November 30, 1911.	90.70	165	Beginning of the new treatment.
December 7.. . . .	88.20	150	No more vertigo.
December 19	86.45	120	Euphoria.
January 9, 1912. . . .	85.50	100	Health excellent.
February 10	84.20	120	Complete euphoria. Is dismissed with normal diet.

It would not be difficult for me to print several dozens of such clinical histories. But I hope the particulars stated suffice to prove the correctness of two theses:

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(1) Obesity is frequently, at least in 40 per cent. of the cases, accompanied by high blood-pressure.

(2) The dietetic treatment of obesity lowers blood-pressure without exception. Since I know no other means which would be so effective in this direction, *I consider the undertaking of such a treatment urgently indicated in the case of men with materially increased blood-pressure (140 mm. Hg, or over). In that case it often fulfils an indicatio-vitalis.*

Shortly before this book goes to press, I am in receipt of a work of Hecht, of the Wildbad Sanatorium,⁴ which arrives at very similar conclusions.

Hecht found in a large amount of material that increases in blood-pressure which must be traced to unsuitable mode of life, hence to excess nutriment, abuse of alcohol, tobacco, and other excesses, can be reduced by dietetic treatment, especially if the increase in the blood-pressure is not of long standing. The means which led to the goal were: Non-irritating diet, diminution in the supply of meat, empha-

⁴Zeitschr. f. klin. Medizin, 1912.

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sis on the vegetable form of diet, restriction of the use of alcohol, and mental rest.

According to my observations, however, success in this depends alone upon the absolute restriction of diet, down to the normal diet or lower.

CHAPTER XX

AMONG the first hundred of my patients there was a very distinguished actress, a member of our leading art institute. She underwent an obesity treatment of moderate extent, which reduced her weight 10 Kg. in 10 weeks. In a letter the lady expressed her joy at the success, which also involved an increase in her activity. Among other things, it said: "Since the beginning of the treatment I have no longer suffered from the fearful attacks of migraine, with which I have been afflicted at short intervals for many years."

The subsequent completion of the clinical history showed that typical, severe attacks of migraine appeared several times a month without demonstrable cause, which stopped completely from the first day of treatment. Since that time, eight years have intervened, and the attacks have never returned with the same violence and have been extremely infrequent.

Until then I had bestowed little attention upon migraine. The successful case just mentioned, an unforeseen supple-

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mentary advantage of the treatment, caused me to search for migraine in every later case and also to give in the course of the treatment full attention to the attacks, according to their number and intensity.

It appeared that in a large number of cases the migraine ceased completely, or at least decreased materially in every direction—frequency and severity of the attacks.

It was without exception the typical migraine cases which reacted thus, while other kinds of headaches of neuralgic or rheumatic nature were not influenced at all, or scarcely any.

However, a certain form of migraine generally behaved in a refractory manner: the attacks which are connected with menstruation and which occur during, shortly before, or shortly after menstruation (every case has its individual time), remain uninfluenced.¹

I have kept my patients and myself from disappointments by not holding out prospects of a favorable influence of the

¹ I have met such cases not infrequently. For example, in a series of 58 patients (female), suffering from migraine, no less than 7 are found whose attacks without exception coincide with menstruation.

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treatment upon the attacks in cases of this kind.

As is well known, migraine is essentially an hereditary disease. The tendency to attacks of migraine is transmitted. The attacks themselves are incited by various causes. When these causes are absent, it can happen, as Moebius ² emphasizes, that the patient with migraine may be free from attacks for years or decades. Theoretically, it would even be possible that he might have no attack during his whole life, and that the presence of his disease was only expressed by its transmission to his children.

Since we have not come to the root of the malady, the tendency to hemicrania, until to-day, it is the modest task of the medical art to eliminate the attacks, or at least to make them as light and as seldom as possible.

Hitherto, also, conditions were not of the best in this respect.

Eulenburg ³ expressed himself with regard to this as follows:

“The prognosis of migraine is only a

² Moebius, “Migraine,” in Nothnagel’s Handbuch.

³ Eulenburg, “Migraine,” in Realencyklopädie, 3rd edition.

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good one in so far as life is not threatened by the neurosis, and also as severe disturbances of the health are not, as a rule, brought about by it. At any rate, migraine remains for the man afflicted with it a very troublesome, often tormenting, complaint, which can only be suppressed in exceptional cases, which cannot always be relieved with certainty and restricted in the frequency of its appearance."

The judgment of all who have to see and to advise many cases of migraine is very similar.

Now, from what do the attacks come, what incites them? The authors are still not certain about this, and especially not in agreement.

What seems very well established to one—for example, the connection of certain attacks of migraine with menstruation, which I and Flatau think very probable—is denied by others. This is also the case with another etiological crisis, which is of special interest to us: the connection of the attack of migraine with digestive disturbances.

Tissot (1783), whom Moebius characterizes as the classic writer on migraine,

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was of the conviction that migraine comes from the stomach. In one of the most recent publications on the subject (Eulenburg, *Realencyklopädie*, chapter "Migraine," 1910), we find, on the contrary: "The frequently recurring assertion of the gastric origin of migraine is just as absurd."

Jourdanet, who recommends slow eating as a preventive measure, also Mathieu and C. Roux, and very recently Herzfeld, must be mentioned as the representatives of the opposing view. Herzfeld⁴ finds that in a great number of cases the migraine attack results from auto-intoxication from the intestine. He therefore orders a substantial restriction in the consumption of meat, or even forbids it entirely, and places his patients upon a vegetable diet. Milk is permitted, but is mixed with alkaline waters. Eggs are forbidden. The diet must not have a constipating effect. But if it does, saline cathartics must be given daily. Alcohol and tobacco are to be avoided, as well as sexual and other excesses.

⁴ Herzfeld, the "Treatment of Migraine," *Therapeutische Monatshefte*, 1908.

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Unfortunately, the publication of Herzfeld contains no clinical histories which would be adapted to prove the therapeutic results asserted.

Even the authors who deny the gastric origin of the attacks recommend similar dietetic measures, especially the avoidance of the immoderate eating of meat and of all excesses in diet.

Flatau, who has recently published a monograph dealing with migraine (die "Migräne," Berlin, 1912), agreeing with several other authors, sees in migraine a disturbance of tissue-change. The regimen which he recommends to combat it coincides substantially with the prescriptions which Brugsch and Schittenhelm consider indicated in "tissue-change gout."

Flatau prescribes a vegetarian diet, deficient in purin, which is to be followed for months and years. Besides vegetables, eggs and milk are allowed. Meat, meat-broth, mushrooms, leguminous vegetables, and chocolate are absolutely forbidden. Tea and coffee (free from caffein) are permitted in restricted amount; alcohol and tea tabooed.

Another author, Haig, designates vege-

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table diet as a panacea for migraine. Flatau, on the contrary, who, however, also gives his patients vegetable food, declares that he has never seen that this diet has completely freed the sufferer from hemicrania from his complaints; yet he has often been able to observe a material relief.

The book of Flatau lacks clinical histories by which the size and significance of his results could be estimated.

As will appear from the following, I have given my patients neither food free from purin, nor even that deficient in purin. The diet which I recommended contained no insignificant amounts of meat. And, nevertheless, there appeared in very numerous cases an improvement in their malady bordering on the miraculous.

As already mentioned, I have arrived at the question of the treatment of migraine without intending it. The case which I reported has the rare peculiarity that a suggestive influence on the part of the physician could be absolutely excluded. I knew neither that my patient was previously tormented by migraine, nor that she remained free from attacks during the

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treatment. This is not unimportant in a "neurosis" like migraine, because, as experience shows, even suggestion may restrain the attacks for a time. But this effect, unfortunately, does not last.

The following clinical histories which report successes, lasting for months and years, seem to me to prove that the dietetic treatment, which was introduced to combat obesity, also prevented the attacks of migraine.

Whether the gastro-intestinal origin of the irritations which excite attacks of migraine in predisposed subjects is thereby proved or made probable, let us not discuss for the present. At any rate, the patients were happy to have gotten rid of *two maladies by one treatment*.

As already mentioned, my material at first consisted only of obese patients whose history showed the presence of genuine migraine. Some examples of this kind may follow here.

No. XXIV, 4, the 30-year-old wife of an officer, visits me on July 18, 1906, in order to become slimmer. *Obesity and migraine are hereditary* in the family (*cf.* also the following clinical history): a sister of her mother suffers from the most severe migraine. No sort of

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serious disease preceded. Migraine since her 13th year; an average of two attacks a week. Her head is well upon awakening. The pains begin in the afternoon. One side of the head is worse—now the right, now the left. Connection with digestive disturbances cannot be demonstrated. Eyes and nose were examined by specialists and found sound. Heart and lungs without findings. Blood-pressure 95 mm. Hg. Appetite good. A moderate eater. Cramps in stomach often occur at 4 A.M. and last from 45 minutes to an hour. Apparently independent of the kind of meal previously eaten. Bowels and menses regular. Patient plays tennis twice a week; takes a walk lasting an hour and a half on other days. Smokes a few cigarettes during the day. Sleeps 8½ hours very well. Former diet:

Morning: Tea and one buttered roll.

Ten o'clock: Bread and butter.

Noon: Soup, beef or roast, potatoes or rice, often farinaceous food, much bread, fruit, black coffee, water.

Five o'clock: Tea, bread and butter.

Eight o'clock: Cold meat, and one egg or roast with potatoes, etc., much bread, water. The patient is strictly abstemious.

Height, 170 cm.; weight with clothes, 81.70 Kg. A decrease of 8 Kg. is fixed as the goal of the treatment.

Prescribed diet:

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Morning: One cup of tea, two lumps of sugar, 50 Gm. of rolls.

Noon: 200 Gm. of bouillon or Julienne soup, 120 Gm. of beef or lean roast, 150 Gm. of green vegetables or 50 Gm. of sauce and 100 Gm. of potatoes, 200 Gm. of fresh fruit, one cup of black coffee with one lump of sugar, no bread, water *ad libitum*.

Five o'clock: One cup of tea, two lumps of sugar, 20 Gm. of bread.

Evening: 130 Gm. of any roast desired or 110 Gm. of cold meat, or one egg and 80 Gm. of cold meat, 140 Gm. of cucumbers, lettuce, or saccharine preserves. Twice a week, roast potatoes as a side dish with the roast, 200 Gm. of fresh fruit, 20 Gm. of bread, water *ad libitum*.

PROGRESS OF THE TREATMENT.

Date.	Weight.	Remarks.
July 18, 1906.....	81.70	Beginning of the treatment.
July 26.....	79.50	Euphoria. <i>No migraine.</i>
August 3.....	78.00	Euphoria. <i>No migraine.</i>
August 17.....	76.60	Euphoria. <i>Menses on August 11th. Migraine on this and the following day.</i>
August 30.....	76.00	Euphoria. <i>No migraine.</i>
September 11.....	74.80	Euphoria. September 8th, menses. <i>No migraine.</i>
October 9.....	74.30	Euphoria. October 8th, menses. <i>No migraine, also no more pains in the stomach. Conclusion of the treatment. Normal diet.</i>

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Subsequent reports:

December 13, 1906: Weight, 74.30 Kg.
Never migraine.

July 14, 1908: Weight, 76.85 Kg. Migraine extremely seldom, and only after gross transgressions in diet. Patient follows the regimen of the treatment again and reduces her weight.

Also reports of most recent date announce that the lady is *almost cured of migraine.*

It is not a question here of menstrual migraine. However, the only relapse during the treatment occurred at the time of the menses.

No. XXIV, 29, the 33-year-old officer, is a brother of the patient whose clinical history was just given. Even as a boy he was too stout. In 1901 his weight reached its maximum of 90 Kg. net. Somewhat decreased by "diet." For several months his weight has remained stationary in spite of continued diet.

Suffers from *fearful* migraine, which begins with "dazzling"; must get to bed during the attack. Pains now on right side, now on left. Between the 4th and 17th of September (the day of his appearance) there were two attacks, on other occasions an average of one attack every three weeks. Feeling of hunger during the migraine. He believes that the attacks were

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incited by mental overfatigue. Every remedy tried, none helps. Heart and lungs sound. Stomach in order, only now and then heart-burn. Bowels regular. Patient walks one hour every day and rides one and one-half hours. Does not smoke, abstains from alcohol. Former diet:

Morning: Tea, one buttered roll.

Noon: Soup, meat, vegetables (never potatoes), farinaceous food or entrée, Mocha, fruit, *much bread*.

Evening: Roast, side dishes or cold meat. *Much bread*, one to two cups of tea, pastry.

Height, 184 cm.

Regimen of treatment:

Morning: Tea, two cups of milk, 50 Gm. of rolls, one egg.

Noon: 200 Gm. of beef soup with solid constituents, 160 Gm. of lean beef or lean roast, 180 Gm. of green vegetables, 90 Gm. of farinaceous food or rice, 250 Gm. of fresh fruit, one cup of Mocha with one lump of sugar, no bread, water *ad libitum*.

Evening: 120 Gm. of vegetables, prepared in English manner, 160 Gm. of lean roast or 220 Gm. of chicken, or 140 Gm. of cold meat, 150 Gm. of lettuce, cucumbers, raw sauerkraut. Once a week (with cold meat) 50 Gm. of bread and butter, otherwise no bread, 250 Gm. of fresh fruit, one cup of tea, two cakes.

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PROGRESS OF THE TREATMENT.

Date.	Body weight.	Remarks.
October 22, 1906.....	92.0	Beginning of the treatment.
October 29.....	88.5	Euphoria. No migraine.
November 5.....	88.0	Euphoria. Migraine once after a hunting dinner.
November 12.....	86.0	Euphoria. No migraine.
November 19.....	85.0	Euphoria. Migraine once.
December 7.....	83.0	Euphoria. No migraine.
		Conclusion of the treatment. Normal diet.
December 3, 1908.....	86.0	Eighteen months later patient presents himself again. <i>Migraine is almost cured. Very rare, slight attacks.</i> Heartburn never appears again

He now follows the treatment-regimen for two weeks and thereby reduces his weight $1\frac{1}{2}$ Kg.

No. XIX, 44, a very intelligent woman, 37 years old, mother of three children, the youngest of which is $3\frac{1}{2}$ years old, seeks me for the purpose of undergoing an obesity treatment. Mother and grandfather, on her mother's side, were corpulent. She herself weighed 83 Kg. until the beginning of her last pregnancy, and, 10 years before, 68 Kg. Has nursed her youngest child and has become 10 Kg. heavier through pregnancy and nursing.

Migraine, inherited from her mother, since

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the age of 10, before the appearance of the menses. Attacks are milder in winter than in summer. An attack at least every two weeks, *always* during the menses an attack. Seat of the pains, on the right. End in vomiting. Duration, *two days and two nights*. Formerly the attacks came more frequently than now.

Cause of the obesity very apparent: excess in consumption of bread.

Blood-pressure, 155 mm. Hg.

Height, 166.5 cm.

Beginning of the treatment on February 14, 1905, with a weight of 93.70 Kg.

Conclusion of the treatment on June 6, 1905, with a weight of 78.10 Kg. and a blood-pressure of 118 mm. Hg.

During the whole duration of the treatment, hence almost four months, not even an indication of an attack of migraine.

No. XIX, 25, an unmarried lady, 45 years old, afflicted with migraine and obesity on her mother's side. Too heavy since the age of 30; weight increased 10 Kg. in the last year. Repeated Marienbad treatments. Result, 4 Kg. at most, with much trouble and torture.

Very violent and frequent attacks of typical migraine. Recently days entirely without attacks are of rare occurrence. Menses regular. For two years repeated, *genuine* attacks of gout, with localization in the balls of the great toes.

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Increased urates in urine upon one examination, otherwise no pathological constituents. Constipated; uses bitter water.

Height, 171 cm.

Weight (with clothes) at beginning of treatment, on January 30, 1906, 107.80 Kg. At conclusion of treatment on May 8, 1906, 95.30 Kg.

During the whole period of treatment *completely free from migraine*, also excellent health in other respects, except for a slight attack of gout, which occurred on February 27th, and was relieved in two days.

I could cite very numerous similar clinical histories. The rule was disappearance, or at least very striking subsiding in the intensity and number of the attacks; the rare exception, unaltered continuance. Gross infractions of diet were revenged by the reappearance of headaches.

The *purely menstrual* migraine often did not react at all; the "mixed"—which always produced attacks during the menses, also at other times—behaved differently. Complete cures in the sense of the entire absence of the attacks could

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seldom be recorded, *substantial improvements* often.

It happened now and then that even migraine patients with normal condition of the nutrition and also those who might require fattening treatments sought me for the purpose of removing their torturing headaches. They were generally relatives, friends, probably also servants, of my obese sufferers from hemicrania.

I undertook to help them also by prescribing a diet.

First of all some examples, then the principles which I drew from my observations.

No. XV, 20, the 45-year-old creative artist and director of a great art institute, inherited migraine from his mother, the latter from her mother. The first attacks in childhood. He distinguishes two kinds of attacks.

(1) The "sudden flight." Inciting factor (according to his opinion), too warm bed covering. The "sudden flight" may come at any time of the day, and also appears very frequently; sometimes daily.

(2) The "severe attack." Several years ago this was recorded every other day; now more seldom, about twice a month. "Pains

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enough to drive me crazy." The patient is deathly pale during the attack.

The severe attacks, he said, were incited every time he overloaded his stomach, also when he ate fat dishes, onions and other members of the same family.

Hemorrhoids since the age of 20, which have caused very violent hemorrhages and which had to be operated on three times. Constipation. Different remedies used; the last time 50 Gm. of milk sugar and compound licorice powder.

Patient is quite a heavy eater. In the evening he drinks a glass of beer, and wishes earnestly to be allowed to retain this habit.

He is 167 cm. tall and weighs 65.60 Kg. in his clothes, hence rather too little.

Diet prescribed (carried out with the scales):

Morning: 200 Gm. of weak coffee, 100 Gm. of rye bread, not fresh, possibly toasted, 20 Gm. of butter, one glass of water.

Noon: 200 Gm. of any soup desired, 100 Gm. of beef or roast, 150 Gm. of green vegetables and potatoes, 140 Gm. of farinaceous foods, 100 Gm. of fruit, no bread, one to two glasses of water.

Five o'clock: Tea, 80 Gm. of bread and butter.

Evening: 120 Gm. of roast, 150 Gm. of potatoes or green vegetables or preserves, 200 Gm. of fruit, one-half litre of beer.

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The most important difference compared to the earlier diet was moderation with respect to amount. Previously the patient had eaten far too much, particularly at banquets, but too little at home.

The success of my prescription was remarkable.

"My husband has been a different man since he has taken your treatment," the wife of the patient reports to me. Indeed, he was so conscientious that he carried the food scales with him and made use of them wherever he was stopping, even when he was a guest. Moreover, the diet regulated the bowels; purgatives were only seldom necessary.

No. XXIV, 44, the 27-year-old girl, is in the service of one of my patients (female). She has suffered from migraine since her 15th year. Inherited affliction can be shown. At first the attacks appeared only during the menses; for several months they have hardly been absent. Hence there is a condition present which Moebius characterizes as "*Status hemycranicus*." The patient can attend to her professional duties only with great tortures, and is in danger of losing her daily bread. No noteworthy findings in the inner organs. Menses regular. Often

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heart-burn, never vomiting, bowels in order. Patient goes out of doors only once in two weeks.

The former diet, composed of five meals, contains abundant bread, at noon meat, in the evening sausage or two eggs. Patient has lost weight in the last year. She weighs 53.20 Kg. with clothes, and is 154 cm. in height.

Diet prescribed:

Morning: 250 Gm. of coffee with milk, one roll.

Ten o'clock: 80 Gm. of bread and butter.

Noon: 150 Gm. of soup, 80 Gm. of meat, 180 Gm. of any vegetables desired, 140 Gm. of farinaceous foods, 100 Gm. of apples.

Five o'clock: 250 Gm. of coffee with milk, one roll.

Evening: Two eggs or 100 Gm. of cold meat or 120 Gm. of sausage, 100 Gm. of bread and butter, one-half litre of milk.

With this diet she gained 2 Kg. in the course of two months, and now looks blooming. The "daily attacks" ceased from the fourth day of treatment, and *slight* attacks could be recorded only during menstruation (twice in the time under observation). The heart-burn has stopped completely.

I could not say whether these patients

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took more or less food before than after the treatment. As is seen, the amount of food I allowed was considered abundant. The addition of fat intended also actually appeared.

It is beyond the scope of this publication to treat here in detail further cases of migraine which were not combined with obesity. Only let this be remarked for those who wish to continue my therapeutic attempts: it does not seem advisable to combine the treatment of migraine with an *energetic* fattening treatment, even if this should be indicated under other circumstances. Let the patient be given at first only so much easily digestible food as is necessary to maintain a uniform weight. Let the amount of food be increased, in order to pave the way for a *slow* addition of fat, only after the expiration of several weeks.

Eating according to the scales, hence a uniformity in the consumption of food which can only be attained in this way, is, according to my full conviction, the cause of the numerous and fine successes on which I look back in my treatment of migraine. I am not able to decide in this

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connection whether the suppression of overeating and the abnormal decomposition processes in the alimentary canal connected with it (as Frankfurter assumes) plays the deciding rôle; or the elimination of occasional cases of overloading and distention of the stomach, which doubtless often occur, when unlimited food is eaten. Both possibilities are open to discussion.

The irritant which incites migraine, which proceeds from the female generative gland, as already mentioned, could be influenced not at all or not materially by the diet.

It is taught that the migraine attack can also be produced by various other causes; for example, pathological conditions of the eyes, nose, etc. I would be guilty of an unpardonable digression from my theme were I to go into these questions further here; I might also be able to adduce no new enlightening observations.

CHAPTER XXI

AMONG my patients there were not a few who suffered from heart-burn and vomiting, or from one of these symptoms alone. These extremely troublesome accompanying and resultant phenomena of hyperacidity and various stomach diseases were often the only real *complaints* of youthful obese subjects who sought me in order to become thin. At first they gave no credence to my promise to free them from these disturbances also. They had, indeed, generally consulted physicians and visited health resorts for this purpose without finding a permanent cure.

Some examples (I could easily multiply the number by ten) may demonstrate what influence the treatment of obesity usually has upon pyrosis and vomiting.

No. XXV, 3, a very famous colleague living in Switzerland, afflicted with gout, never seriously ill, had suffered from migraine until he became an abstainer (about twenty years

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ago). Heart-burn and vomiting, especially after nights with insufficient sleep. Diarrhœa in youth, bowels now regular. No sort of outdoor exercise, except occasional bicycle trips; no other sport. Increased in weight very recently, whereby his activity was impaired. Former diet:

Morning: One cup of coffee with milk, graham bread, butter, confectionery (in large amount).

Noon: Soup, roast, vegetables, dessert, much graham bread.

Four o'clock: Tea with sugar.

Evening: Meat, vegetables, fruit, one glass of milk, graham bread. Strictly abstemious.

Height, 180 cm.

Weight, with few clothes, 86 Kg.

We decide to reduce the weight about 6 Kg. Beginning of the treatment on October 1, 1906. Diet prescribed:

Morning: 100 Gm. of milk thinned with tea or coffee in any amount desired, 10 Gm. of sugar, 50 Gm. of graham or other bread, very little butter.

Noon: 200 Gm. of beef soup with very little solid constituents, 120 Gm. of lean roast or boiled beef, 180 Gm. of green vegetables or lettuce or cucumbers, 30 Gm. of butter, 250 Gm. of fresh fruit.

Five o'clock: Tea, 15 Gm. of sugar.

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Evening: 150 Gm. of any roast desired, possibly in two courses (also fish and roast), 160 Gm. of green vegetables or salad or cucumbers or California preserves, 30 Gm. of bread, 250 Gm. of fresh fruit, tea, 15 Gm. of sugar, water always *ad libitum*.

This diet, followed with the greatest conscientiousness, reduced the weight to 79.4 Kg. in six weeks.

Vomiting and heart-burn disappeared entirely from the first day of the treatment; also, no vomiting, no heart-burn during the normal diet, which was considered abundant.

Four years later I saw my colleague again. He remained free from ailments and also kept his weight continually at the low level which it had reached.

No. XXXV, 23, a merchant, 28 years old, 187 cm. in height and weighing 114 Kg. (with clothes), sought me in 1909 for an obesity treatment. Very heavy eater, chiefly of bread. Has suffered for years from torturing heart-burn, at times also from vomiting. A capable Vienna physician found him entirely sound, supposed the cause of his ailment to be the abuse of tobacco, and forbade him this.

Patient stopped smoking. But the heart-

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burn became almost imperceptibly less. There fore he began to smoke again some months later.

Another physician advised him to eat less. Patient endeavored to follow this advice; but since he received no definite directions as to what food was allowed and what forbidden, and since he ate rather more than less in doubtful cases, as the great majority of men do in a similar position, this order, correct in the main, also failed to attain its end.

Heart-burn and vomiting ceased completely from the hour when he followed the regimen I prescribed with the help of the scales.

After a treatment of two months, which reduced his weight 7 Kg., an acute gastritis appeared as the consequence of a fish poisoning. At the expiration of this, the patient was "well nourished," at the wish of his family physician, in order to recover more quickly. Immediately the heart-burn appeared again, but disappeared on the day when the directions of the treatment were followed once more.

No. XXV, 13, the 36-year-old wife of a merchant, had contracted catarrh of the stomach six years ago, which lasted two years. The appetite is good now. *Violent heart-burn and*

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vomiting almost daily. Patient is 166 cm. tall and weighs 86.90 Kg. Is to reduce from 10 to 12 Kg. *Still a little heart-burn at the expiration of the first week of treatment, but no more at the expiration of the second week.* Vomiting very seldom. After a treatment lasting nine weeks, patient is dismissed with a weight of 76.10 Kg. and *entirely free* from afflictions.

In this case the influence of the regimen of the treatment upon the two disturbances which concern us here did not appear at once, which is probably to be traced to a more deep-seated disease of the stomach, which was still present at the beginning of the treatment.

No. XLIII, 47, the 34-year-old musician, is 180 cm. in height and weighs 95 Kg. (with clothes); has suffered from youth with cramps of the stomach and from unbearable heart-burn and vomiting after almost every meal. These disturbances are familiar. One of the most distinguished physicians in Vienna establishes a diagnosis of hyperacidity of high degree, and prescribes a diet according to the scheme: This is forbidden ———; this is allowed———. No success. Patient consumes daily 10 hellers' worth of bicarbonate of soda. On January 14, 1913, he seeks me for an obesity treatment.

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Still heart-burn. Only on the first day of the treatment. From then on traceless and permanent removal of the tormenting symptoms. The decrease in weight progresses according to schedule. On March 8th weight still amounts to only 88.30 Kg.

I could cite similar clinical histories in great number, but I believe that my readers would learn no more from them than from those already referred to in abstract. The same thing is always repeated: men who eat much (especially bread) become obese and complain of heart-burn and vomiting. They have already tried many things, visited health resorts, etc., without permanent success. They feel free from symptoms during their residence in Carlsbad; but on the return journey, perhaps even in the dining car, they have to draw forth their soda box again in order to quiet the burning in their stomachs. If these men are subjected to an obesity diet and later to a normal diet, according to the scales, they remain permanently free from symptoms.

The supposition, absence of serious diseases of the stomach, generally proves correct in the case of our patients, since

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these do not usually occur in connection with the addition of fat.

There would be nothing more absurd than to believe that every case of pyrosis, etc., can be healed so easily. The phenomena may also accompany diseases which are serious or difficult to cure.

But, on the other hand, it may also occur that men who eat too much get heart-burn and vomiting, but put on no fat. Even these can be cured immediately by a single regimen, measured out quantitatively.

No. XLI, 11, the 35-year-old merchant, is the brother of a patient (female) whose weight I reduced 20 Kg. He was never seriously ill. Torturing heart-burn and noisy eructation have occurred after every meal for two years. Bowels regular without cathartics. Pains in the region of the stomach and vomiting could never be recorded. Examination of the inner organs without findings. Has consulted many physicians without success. Was also in Marienbad without being cured.

Patient is a heavy eater. The food is poorly chewed and hastily swallowed.

Height, 171 cm.; weight (with clothes), December 28, 1911, 80 Kg.

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Patient wishes, above all, to be freed from his complaints. A slight reduction in weight was at the same time comprised in the bargain. First a mild obesity diet is prescribed, then the following normal diet:

Morning: 200 Gm. of coffee with cream, one lump of sugar, 60 Gm. of rolls, two eggs or 50 Gm. of ham.

Noon: 150 Gm. of soup with solid constituents, 120 Gm. of beef or roast, 150 Gm. of spinach, boiled lettuce, carrots, green peas, green beans, potatoes or 100 Gm. of rice, macaroni, noodles, 120 Gm. of farinaceous foods, 150 Gm. of fresh fruit, one glass mineral water, no bread.

Five o'clock: 200 Gm. of coffee and 40 Gm. of rolls.

Evening: 150 Gm. of roast or fish or 220 Gm. of roast poultry, 150 Gm. of vegetables as at noon, or salad or preserves, 150 Gm. of fresh fruit, no bread.

Within three weeks the weight was reduced 2.50 Kg., then it stopped.

Since the beginning of the treatment neither heart-burn nor vomiting. Only on two days, when the patient disregarded the rules, both disturbances appeared again.

I have at my disposal only a few

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observations on those who are *not* obese, but I am convinced that a restriction of the amount of food down close to the actual requirement, as recorded by the scales, would bring relief to many a patient of this kind. Whether a qualitative choice of food and a prohibition of dishes, which, according to experience, cause heart-burn and vomiting, or which the patient designates as harmful to himself, will be necessary *every time*, I do not know. That will have to be decided from case to case, possibly even by a trial. My *obese* heavy eaters could generally stand without trouble even the dreaded vegetables rich in cellulose, the varieties of the cabbage family. In their case the heart-burn and vomiting were caused almost without exception by excess of food alone.

CHAPTER XXII

JUST as many others before me, I, also, could not rid myself of the impression that the tendency to put on fat increases, or, at any rate, first begins, with the appearance of the climacteric. Not infrequently I had the opportunity of treating women who were laboring from climacteric flushings and sweatings.

These phenomena had for me at first only the significance of a topic which had no reference to my field. I had heard again and again complaints about the conditions and about the futility of all therapy. Ovarian preparations were tried in many cases, without any result. This remedy may have been at times successful. But no such case was found among the many women whom I have observed. They were all more or less obese. Perhaps that was the cause: perhaps the preparations are effective only in the case of thin people. To the joy of the patients, in which I took a lively interest, and, as I wish to confess openly, unexpectedly and almost unintelligibly to me, in the majority of cases the two most

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disagreeable symptoms entirely vanished with the beginning of the treatment, or were reduced to a very endurable degree. In the beginning I did not connect the treatment with the ceasing of the flushings. Of course, the flushings cease at some time in the case of every woman, and it might have happened that they ceased just at the time when my treatment began. But, since the temporal coincidence was always repeated; since, finally, I could predict the effect, as in an experiment; since the effect seemed to be independent of the duration of the disturbances; and since it could also be recorded when the flushings first made their appearance; and, above all, since the two symptoms came again when the nutriment according to the treatment was interrupted for any reason, I now consider *a causal connection between treatment and abatement of the climacteric flushings* extremely probable.

This influence was also present in the artificial climacteric which was caused by the removal of both ovaries.

I was never in a position to test whether the flushings, etc., could be made to disappear by the effect of a certain diet even in the case of those who were *not* obese.

CHAPTER XXIII

As is well known, and as I have already mentioned in another place, obesity and disturbances of menstruation frequently occur in combination. The cases of myxœdema, of diseases of the hypophysis, of *typus adiposo-genitalis* (Alfred Fröhlich), need not be considered in this connection. We are interested here only in the case of otherwise healthy girls and women who were either obese from youth on, and who never or very seldom menstruated, and others whose menstruation, previously regular, returned only at great and irregular intervals, or stopped entirely from the time when obesity had reached a certain height.

The amenorrhœa and the sterility connected with it which obese women have form an indication for reduction, recognized even by the opponents of obesity treatments. And with good reason.

A regulation of the menses appears, in the course of the reduction of weight, in a very considerable fraction of cases. But, while the influence of the treatment upon

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blood-pressure, migraine, and the climacteric flushings can be recorded almost always in the first days, when enormous quantities of fat are present, menstruation first appears or becomes regular only when a *considerable loss of weight* is attained, often only after months.

On the other hand, heed is to be paid to the fact that it is not always prodigiously obese women who suffer from menstrual disturbances. Some examples may illustrate what has been said.

No. XXXVIII, 27, a 17-year-old girl of radiant appearance, in sound health, 167 cm. in height and weighing 83.70 Kg. with clothing, presents herself to me on October 1, 1910, for reduction. First menses at the age of 14. Intervals of several months. The last menstruation appeared in May, hence more than 4 months ago.

The treatment took its normal course. *From the time when the weight has sunk 7 Kg. the menses appear at regular monthly intervals.*

No. XXXIX, 26, the 32-year-old wife of a colleague, 161 cm. in height and weighing 75.10 Kg. with clothing. Menses irregular, about every 6 weeks. The weight is reduced to 66 Kg.

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Since then—two years—the menses appear at monthly intervals with absolute regularity.

No. XII, 4, the 30-year-old wife of an official, mother of an 8-year-old child, 152 (!) cm. tall, weighs 82.90 Kg. (with clothing), hence very obese. Menses only every 4 to 6 months. Presented herself to me June 28, 1905. Her weight is reduced about 8 Kg. Menses become regular from that time on, and remain so for one year. Then the patient interrupts the dietetic treatment. She becomes heavier, menses badly retarded. No menses from July to December 2, 1908. A new treatment. Menses appear once, and then pregnancy, which ends with an abortion (March 22, 1909).

The treatment is now continued. The menses appear twice at normal intervals, then a new, very-much-desired pregnancy, which is carried out to its normal end.

It is no very unusual occurrence for women who had remained sterile many years to become pregnant during or after an obesity treatment.

No. XXXIII, 8, a 30-year-old officer's wife, had been pregnant but once, 8 years ago. She fell ill with pneumonia. Abortion in the third month. Then pregnancy appeared in connec-

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tion with a "hunger treatment" which made the woman lose 5 Kg. Since then steady increase in weight. Height, 160 cm.; gross weight on July 14, 1908, 81.85 Kg. Pale appearance. Menses, always irregular, now much delayed; last in January. Since then merely "traces." Suffered before from migraine; now less. Hearty eater. Five meals a day. Much bread. Blood-pressure, 140 mm. Hg.

On November 2nd, patient is dismissed with a weight of 63.05 Kg. The decrease amounted, therefore, to 18.80 Kg. She now looked much better, had entirely lost the migraine. The blood-pressure had sunk to 120 mm.

Menses on August 6th, hence still during treatment; after that no more. We had referred this to the amenorrhœa which had existed for a long time. Wrongly! Without any one suspecting it, the woman was pregnant. On December 4th, a day of tremendous excitement, since her husband fell seriously ill and had to be operated on at once, abortion appeared in the fifth month.

On April 20, 1909, I saw the woman again for the last time. Blooming appearance. Weight, 66.30 Kg. Menstruation had become entirely regular.

The case now following, of very recent date, is instructive in two directions. It is a "great" treatment, at the same time

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one of quite rapid progress, which I wish to describe somewhat more in detail. We will see at the same time the regulation of the menses after a radical reduction in weight has taken place.

No. XLI, 19, the 22-year-old student (female) of philosophy, is doubly burdened with obesity. Too heavy even as a child. Scarlet fever at the age of 17; rapid increase of weight during convalescence. Diphtheria and measles as a child, otherwise healthy. Migraine once to twice a month, not menstrual. Perspires very heavily and then takes cold easily. For a year she has not been able to walk quickly nor dance. In that case dyspnœa, not palpitation, appeared. Stomach good, bowels constipated.

Menses often absent many months. First menses at age of 13. Now cessation of a year. Appearance blooming. Gynæcological findings, upon rectal examination, made by Professor Mars in Lemberg, show normal conditions.

Patient now walks very little. I prescribe for her at first a daily walk of half an hour; later, if the desired activity shall have appeared, one of one to one and one-half hours every day.

Sleep, 9½ hours, to be continued during the treatment.

Former diet:

Morning: Tea, two rolls.

Ten o'clock: Bread and 30 Gm. of ham.

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Noon: Soup, meat, vegetables (many potatoes), bread, water as drink.

Four o'clock: Tea, one roll.

Eight o'clock: Roast, many potatoes or cold meat and bread, tea.

Patient likes dainties. Eats no more than companions of her own age.

Blood-pressure, 100 mm. Heart and other inner organs without findings. Analysis of urine shows normal conditions.

Height, 162 cm.; weight with clothing, 121.50 Kg.

A decrease of 30 Kg. is fixed as the goal of the treatment. The diet, found suitable after some alterations, was composed as follows:

Morning: Tea with saxon, 40 Gm. of rolls.

Ten o'clock: 100 Gm. of fruit.

Noon: 150 Gm. of bouillon, 90 Gm. of beef or roast or 140 Gm. of chicken, weighed with the bones, 170 Gm. of vegetables, namely: spinach, kale, boiled lettuce, cabbage, cauliflower, green or yellow string beans, green peas, Swedish turnips or red beets (pickled), 200 Gm. of fruit, apples preferred, no bread, water *ad libitum*.

Five o'clock: Tea with saxon, 40 Gm. of rolls.

Evening: 120 Gm. of roast or other lean meat dish, 120 Gm. of cucumbers or lettuce, 150 Gm. of fruit, tea with saxon *ad libitum*.

Also recommended for supper: 500 Gm. of sour milk and 40 Gm. of bread.

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PROGRESS OF THE TREATMENT (in Abstract).

Date.	Weight with clothing.	Remarks.
February 4, 1912.....	121.50	Beginning of the treatment.
February 11.....	119.20	Euphoria, no hunger, good sleep, no migraine.
February 26.....	115.50	Euphoria, no hunger, good sleep. No migraine.
March 11.....	112.50	Good health, except for very slight headaches in the last two days. Two spoonfuls of aqua levico fort. prescribed.
March 25.....	108.30	Good health, no migraine. Patient begins to take gymnastics, Müller system.
April 7.....	104.90	Perfect health, no migraine.
April 21.....	103.80	Appearance of menstruation on April 18th. Migraine on this day.
May 6.....	99.80	Euphoria, no migraine.
May 25.....	96.20	Menstruation and migraine on May 25th; otherwise good health and no migraine. Rowing-bath prescribed (<i>cf.</i> Chapter xxiv).
June 9.....	94.40	Perfect health; very slight headache once. Daily rowing-bath of 22° C. and 15 minutes' duration taken with great enjoyment.
June 23.....	91.40	Euphoria.

Therefore the goal is reached. The patient has lost 30.10 Kg. On June 28th she presents herself to me again. Bloom-

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ing appearance. Figure not to be recognized. Weight would be estimated lower than it is. Can now walk for hours at a time, also climb without feeling any trouble. Actual migraine was present only at the time of the menses, which have occurred twice at normal intervals.

Examination of the heart shows absolutely normal conditions. Pulse 76, normal sounds, cardiac dulness not extended, blood-pressure 100.

Appropos of this case, let me touch upon one more question which is often put.

Not the slightest trace of folds or wrinkles can be detected in the face of the patient.

These never appear in individuals who are less than 35 to 40 years old, not even in the case of still more radical reductions. The complexion of a 28-year-old lady whose weight had been decreased from 135 Kg. to 75 Kg. (hence by 60 Kg.) under my guidance remained that of a young, blooming girl.

In the case mentioned here also no deformation of the breasts occurred. These had not been by nature too large and the seat of great masses of fat.

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The patient is to undertake a holiday journey to Switzerland. She is going to make there easy mountain trips with my permission and with all the precaution ordered. The patient announces on June 13, 1913, that her menses appear regularly. Weight, 89.30 Kg.

CHAPTER XXIV

As already set forth and established in our earlier chapters, I no longer look upon the increased consumption of fat by muscular exercise as the most important and most effective part of an obesity treatment. But it would be false and foolish to dispense with the support which muscular exercise in its various forms can offer us. The albuminous content of the organism is protected most securely by muscular exercise. But also for educational reasons I require my patients to take a brisk walk out of doors daily, lasting *at least* an hour, unless they hitherto have been entirely incapable of this. The task is often increased to two hours, seldom more. Often, when there is danger that walking will degenerate into creeping, I prescribe a certain number of steps (to be recorded with the pedometer). Six thousand steps should be taken in an hour. Or I order the patient to cover a certain distance ($4\frac{1}{2}$ to 5 km. in an hour).

The more precise the prescription the more certain can we be of its exact observance.

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Young patients with perfect hearts, normal blood-pressure, and without excessive obesity may also take mountain trips, in which emphasis is placed upon the gradual increase of the task, if the men are not already trained. When rambles are undertaken only now and then, Sunday for instance, I grant the patient additions to his diet, as already noted.

Young men with sound hearts should practise sports. Rowing, cycling, riding, tennis, golf, fencing, gymnastics, also gymnastics in the room, for example, according to the Müller system, and finally, turning of the ergostat, are recommended. This graduated form of muscular exercise is adapted for men who can carry out no other muscular exercise, on account of age or occupation.

On the other hand, sports which impose *maximum* demands upon the heart (football, strenuous athletics, cycling up mountains, and with great exertion, especially racing) should be omitted during the period of treatment.

I value swimming most of all forms of sport. It has a two-fold usefulness: On the one hand, as a very complete gym-

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nastic exercise which occupies the whole muscular system; on the other hand, as a withdrawer of heat. By the contact of the skin with water, which is a good heat conductor, the organism parts with a large amount of heat during the bath. This must be equalized by increased oxidation, resulting from the combustion of the body fat.

Since swimming-baths are not always and everywhere at our disposal, I invented a substitute in 1904, which proves very satisfactory—the “rowing-bath.” A copy of my publication on this subject may find a place here.

THE ROWING-BATH

(DAS RUDERBAD) (BLÄTTER FÜR KLINISCHE
HYDROTHERAPIE, Nr. 6, 1904)

A cold swimming-bath incontestably belongs to the great enjoyments of life in the hot summer days. It refreshes body and mind, makes both capable of work and of enjoying work. The paralyzing effect of heat is banished, appetite stimulated, and sleep made sounder.

There is certainly no perfect substitute

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for the swimming-bath. But this ought not to prevent us from seeking at least a partial substitute. The swimming-bath itself is at the disposal of only few, whenever they require or desire it.

Every healthy man can stay from 15 to 30 minutes in water of 20° C. (16° R.) when swimming without suffering from cold. We feel extremely uncomfortable in a tub-bath of 20° C. after a few minutes, and it certainly requires some heroism to stand it for a half hour.

The causes of this difference are often obvious. *We accomplish muscular exercise in the swimming-bath, we do not in the tub-bath.* Heat is produced as a by-product in muscular work. This, for the most part, is again given off through the skin, partly also through the lungs. At the same time, more blood streams through the vessels of the skin, the skin becomes warmer, the difference between its temperature and that of its surroundings becomes greater, and the loss of heat, which keeps pace with this difference, is likewise increased. The increased production of heat and its loss during exercise can be perceived subjectively as a feeling of

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warmth, which doubtless proceeds from the end organs of the heat-perceiving cutaneous nerves.

Conditions are the reverse in the cold tub-bath. The loss of heat is substantially increased by reason of the better thermal conducting power, even if the temperature of the water is higher than that of the air in which we move at other times, wearing clothes which are poor conductors of heat. The heat regulation becomes active while the blood current through the skin is cut off, the temperature of the skin lowered, the difference between the skin and surrounding medium diminished. Perception of cold appears subjectively, which finally is also a heat-regulating process, since it causes us to end the abnormal condition by hastening from the bath.

Still another difference between the cold swimming-bath and the cold tub-bath deserves to be noticed. Our body moves through the water in swimming. The tactile impression which is caused by the water gliding over our skin is agreeable. It heightens the enjoyment of the bath, the more powerful it is,—that is, the more quickly the water moves forward

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over the body or the body through the water.

These components have an especially refreshing effect if the water is alternately quiet and in vigorous motion, and particularly if an occasional dousing of the part of the body which is outside the water follows at the same time. *The ideal of the cold bath is the sea-bath with the surge of the waves.*

The work accomplished in the cold bath does not always have to be expressed in the motions of swimming. Aside from the stamping and squirming by which non-swimmers instinctively render their long stay in the cold river- or sea-bath possible, there is another natural form of the kinetic bath, which deserves short mention: the river-bath—the bath in swift moving water. (In Vienna there are such baths in the Danube.)

The work accomplished in the river-bath consists in the anchoring of the body with the hands and feet, in movements of resistance against the surging of the water, and in laborious walking backward and forward along a rope or the railing enclosing the bathing basin. The rapid,

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yet irregular, jerky motion of the water forms the chief charm of this refreshing kind of bath.

On the basis of the experiences and considerations stated, I have undertaken to create conditions in the tub-bath similar to those found in the swimming- or in the river-bath.

Permit me to describe the stages by which I arrived at the goal.

At first I attempted to accomplish the necessary exercise as it is done even now in the "half-bath": by rubbing the body, also by splashing and by stirring up the bath water with the palms of the hands. It was soon shown that this form of activity is unsuitable. The rate of the movements must be very fast in order to produce the amount of exercise necessary to banish the feeling of cold. For every single movement requires but little energy.

But one soon becomes tired by the quick, squirming movements, carried out by a few small muscles, without proper resistance, and the bath ends prematurely.

I now endeavored to find a form of movement which is similar to the move-

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ments of swimming, at least in rhythm. The latter, which occupies almost all groups of muscles symmetrically, for obvious reasons could not be carried out in the bath-tub, but there is another form of exercise which is likewise extremely suitable: the movement of rowing.

Numerous groups of muscles are likewise brought into play with the bending forward and backward of the upper body in rowing.

Every healthy man quickly learns to carry out these or similar movements from 15 to 30 minutes without interruption, without becoming tired.

The movement itself, in order to be useful for our purpose, must represent a greater accomplishment of work, hence must overcome an obstacle.

I accomplished this by stretching an elastic tube about 2 metres long which formed a loop and was fastened to the foot of the bath-tub.

The bather grasps the middle of the tube with both hands and stretches it by bending back the upper body and drawing up his hands to his chest. Then he bends forward again from his hips and

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stretches his arms out horizontally, where-upon the tube is shortened to its natural size again.

Very recently I found at last a still simpler form of exercise, which offers a special advantage compared to the other.

The necessary apparatus¹ consists of a little board 25 cm. long, 11 cm. broad, and 1 cm. thick, which has on the middle of both narrow sides 2 cylindrical shaped handles.

A thermometer, attached to the middle of the board, makes the continual observation of the temperature of the water possible.

Rowing movements are carried out with the board. The bather grasps the grips, bends forward and draws it through the water up to his breast. Body, hip, and arm muscles must take part in the work done. Not more than 20 to 25 of such rowing movements should be carried out per minute. Let every single movement be made "accelerando," the beginning slowly, the end more quickly. At the beginning the anterior surface of the board stands perpendicular, but it is then turned

¹ For sale by J. Friedl, Vienna I, Schulerstrasse Nr. I.

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up a little in order to hurl a small breaker against breast, neck, and head.

I have the return of the oar to the first position carried out through the air without resistance. Thus there is gained, on the one hand, the "recovery phase," which is felt at every movement very agreeably; on the other hand, the stream of water which the movement of the board produces is not disturbed.

The powerful movement of the water gives an advantage to this form of bath which it shares with the swimming-bath and the river-bath. The significance of the streaming water has also been very recently recognized by others.

Bathing mechanisms are manufactured in which the water is set into circulation with the help of a paddle-wheel turned by a motor.²

The temperature of the bath is made dependent upon the individual taste of the bather. It is agreeable if the water is not too cold in the beginning. As soon as the skin is moistened the bath can be

² It would be no difficult technical task to increase the rapidity of the water's movement. A paddle-wheel could be fastened to the upper edge of the bath-tub in the place of the rowing board, and this could be turned by the bather by means of connecting rods.

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quickly brought to the desired temperature by running in cold water. The cold water should, if possible, run in at the bottom of the foot end. In case of need it can be guided with the aid of a tube.

A rowing-bath in practice is carried out as follows:

The tub is half filled with water at 30° C. (24° R.). The bather gets into the tub and as near as possible to the head end in order to have sufficient room for his movements, grasps the rowing board, and carries out the movements described. Now the cold water is turned on in a quick stream. (If the tub becomes too full, the water must, of course, be let out.)

When we are dealing with sound, strong men, the temperature can be 20° C. (16° R.) and under. I myself have repeatedly bathed at 16° C. (12.8° R.), and remained in the bath 25 minutes.

A somewhat higher temperature and shorter time for bathing is recommended for men with deficient blood supply and sensitive constitution.

The effect of the bath, as perceived subjectively, is identical with that of a swimming-bath of the same temperature.

Every disagreeable sensation of cold

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is absent during the bath. On the contrary, we can work ourselves warm even in very cold water, so that the need of an occasional cooling off of the head and upper body by a cold douche or shower is felt. If the exercise is not overdone, we can bring our body into an extremely comfortable condition on the sultriest day. We have the agreeable sensation of abundant muscular exercise without the disagreeable one of heating, which otherwise accompanies it. At the same time, an agreeable cooling of the skin is felt without the disagreeable shudder which usually forces us to interrupt a cold tub- or douche-bath quickly.

After the bath, even when the temperature of the air is very high, we feel invigorated and refreshed for many hours.

The sweat secretion is interrupted, the skin remains cool and dry.

The bath is a powerful stimulant to the appetite, and doubtless also promotes sleep.

A more detailed report of the changes, which can be shown objectively, will be given later. I will only state a few particulars here.

The temperature of the blood, measured

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in the rectum, was *not influenced* by a bath at 20° C., lasting 20 minutes. This finding agrees with that of Winternitz, Tschurtschenthaler, and Tripold.³ They maintain firmly that a cold swimming-bath in the sea also exerts no material effect upon the temperature, if the muscular exercise expended is not excessive.

On the contrary, the authors mentioned observed an increase of the blood-heat of 1° C. with a very low temperature of the water, when *great* muscular exertion was caused by high waves. On the other hand, I was easily able to demonstrate the cooling off of the surface of the skin. With the aid of a new method⁴ which I devised, I measured the temperature of the skin of the back and of the palm of the hand and found:

Skin temperature..... {	of the palm of the hand	of the back of the hand
Before the bath.....	34.5°	33.4°
Rowing-bath of 18° C., lasting 20 minutes.....		
30 minutes after the bath.....	27.2	27.5
65 minutes after the bath.....	27.5	28.0

³ Zeitschrift f. klin. Hydrotherapie, 1900, vols. 4 and 5, and 1902, vol. 2.

⁴ "A Simple Method of Measuring the Temperature of the Skin," Münch. med. Wochenschr., 1903, Nr. 39.

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The cooling effect of the bath finds expression in these figures. Sixty-five minutes after leaving the bath, the skin of the two places measured was still 7.0° C. and 5.4° C., respectively, cooler than before.

Twice I attempted to determine the amount of heat which was given off in the water. I chose for the attempt days on which the temperature of the air in the bath-room was almost equal to the temperature of the bath, so that the warming of the bath water had to depend exclusively on the heat given off by the bather.

Two-hundred and thirty litres of water were warmed in 25 minutes from 16.0° C. to 17.0° C. Consequently the man weighing 75 Kg. has given off in the bath water 230 calories in the time mentioned. The sustained, intense movement of the water certainly effected an equable distribution of the temperature and the removal of an error otherwise feared.

That the cold swimming-bath signifies a powerful stimulant to tissue-change has already been emphasized by Winternitz and his coworkers in the publications cited. The same thing is doubtless true

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of the rowing-bath, which is analogous, physically and physiologically.

I have myself made use of the rowing-bath until now as a means of refreshing and hardening, and as a stimulant to tissue-change, but I believe that it can also be turned to a wider account therapeutically.

* * * * *

Two hundred and thirty calories form about 10 per cent. of the daily exchange of a man of medium weight, and are of great importance in our treatment. A swimming- or rowing-bath can hasten the rate of the decrease in weight materially.

We desire such a support especially in the warm season, in which the quota of the tissue-change, which is concerned with the maintenance of the temperature of the body, sinks, and, as a result, the daily decrease in weight, with the same diet, is less than in winter. It is doubly agreeable because it does not involve restriction of diet and because it takes the form of a refreshing exercise.

All hydropathic treatment which extracts heat works like the swimming- and rowing-bath, even if not as energetically.

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There is nothing to be said against their use, especially if they are indicated for other reasons.

Swimming- or rowing-baths must be so fitted into the order of the day that they immediately precede a hearty meal. The lively appetite which they excite should be promptly satisfied.

Warm tub-baths have no particular effect upon the treatment. Let each one bathe as often as he is accustomed.

Sweat-baths of every kind (steam-baths, hot-air-baths, electric-light-baths) are not in themselves reducing agents, but act only by inducing perspiration and thus extracting water from the organism. Therefore they are unsuited to our purpose. If of long duration, they may even retard tissue-change by storing up heat.

Therefore I do not prescribe them in pure obesity treatments, but (see Chapter V) when œdema is present. In these cases they are useful.

If, however, a patient has been accustomed to visit the steam-bath once or twice a week, and wishes to continue this exercise, I do not interfere with him. The steam-bath is followed by cold douches,

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sometimes even by a full-bath in cold water or by a cold swimming-bath. These constituents of the sweat-bath, as is already shown, can also be of use to our patients.

During sleep, and even in the muscular repose induced by the horizontal position, tissue-change is lowered.

A man will burn up more fat with the same nutriment and 8 hours' sleep than if he slept 12 hours, and substantially more than if he kept to his bed continually. Hence tissue-change could be increased by curtailing sleep. But without exerting an influence upon the diet at the same time, a substantial reduction of the fatty content cannot be attained. I make, however, only cautious use of the restriction of the period of sleep in order to "support" the dietetic treatment.

The need of sleep varies very much with the individual. We hear and read that a few hours of rest were sufficient for the heroes of intellect. Other men just as great had to sleep 9 hours in order to maintain their full intellectual powers. And it is the same with average men.

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This is not the place to enter into a general discussion of the correct or permissible length of sleep. It only interests us in so far as we must give advice or directions to our obese patients.

The standpoint at which I have arrived on the basis of much experience is:

If occupation and habits of life permit, patients may sleep 9 hours; and if it is a case of *nervous* men, without exception, even 10 hours, in which case it is permissible that a half, possibly a whole, hour of this is transferred to the afternoon.

As a matter of course, I will advise none to sleep longer than he did before the treatment unless he was accustomed to stay awake over drinking bouts, etc. There are three reasons for the liberality which I employ in this point.

First, experience has taught me that the treatment has never been hindered by patients sleeping 9 and, in exceptional cases, even 10 hours.

Second, that stricter orders meet with the most violent resistance or are not followed at all.

Third, that when they are followed, without exception all sorts of complaints

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about nervous disturbances are heard, about ill-humor, headache, giddiness, ravenous hunger, etc., which do not make it seem advisable to insist upon the order which restricts sleep. This is true very particularly of the siesta after dinner, which is indispensable to many men. It frequently happens that patients regard this nap after dinner as the only cause of their obesity, and for years, even decades, struggle against what they believe to be, or what they are told, is an extremely dangerous habit. Without success! They always lie down again after dinner even with bad twinges of conscience. The absence of the "little quarter of an hour" would make them ill-humored the rest of the day, and incapable of much activity.

Now, such men are very happy when I do not forbid them this source of comfort. On this account they are generally ready for other renunciations, and they remain valiant and persevering.

As a matter of course, I make use of all means to stop excesses of laziness, which are incompatible with the treatment. This often succeeds in the case of youthful individuals, whose personalities are

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still impressionable, and who are under supervision and guardianship. The inertia of older persons is almost always an incurable disease. Improvements occur during a short residence at a health resort or in an institution. After the return almost all who have improved suffer a relapse.

CHAPTER XXV

At the conclusion of treatment I instruct my patients as to their further procedure. The success attained must be retained permanently. The normal or maintenance diet is composed on the basis of the experiences of the latter weeks of treatment. I endeavor to ascertain whether the patient has followed the prescriptions of the treatment exactly during this period, or whether and in what direction he has deviated from it. It is not difficult to determine the regimen desired when attention is given to the decrease in weight observed, the average of which is computed from the latter weeks of the treatment. In this connection the foods can either be taken into account according to their oxidative value, or the procedure can be empirical. I prefer the latter way, since several "unknown quantities" must be reckoned with, just as in the regimen of the treatment, and a *certain* formula for the normal regimen cannot be found by a method of computation.

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Therefore I prescribe a regimen which seems to be suitable according to experience, and correct it by the result obtained. In this connection heed must be given to the fact that the transition from the treatment to the normal regimen is *always* attended by an increase in weight which can be observed even in the early days, since it depends not upon the addition of fat but upon increase in the content of the stomach and intestine, and which is *not to be progressive* in case the regimen is correctly chosen.

The increase in the early days of the normal regimen seldom amounts to more than 1 Kg., generally somewhat less. It is the same amount by which the weight sinks in the first days of a new treatment more quickly than during the further course.

The rations of meat are generally sufficiently large in the regimen of the treatment, and their increase is only seldom and in a small degree permissible in the normal regimen. Hence the other constituents of the diet should be improved, and, what is more, *as far as possible according to the special wishes of the*

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patient. The more these are met, the more the prospect of his continued obedience.

But in one point I am accustomed to turn deaf ears to such wishes: only in exceptional cases is it permitted to eat bread with the principal meals, almost never for daily consumption. It is especially in bread-eating that excesses are the rule, and then the further taking on of fat is given free rein. Relapses are based chiefly upon the abuse of the consumption of bread.

I have already mentioned the fact that the rule holds as well for the eating of bread as for alcohol: abstinence is easier to bring about than moderation. It is easier to renounce the first mouthful than the second and the following ones. Hence, even the first must be forbidden.

It is difficult for many, year in, year out, to pay such heed to quality and quantity of the food as the maintenance of the permanent, equal weight would demand. Even in the case of such men permanent successes can be attained, and, indeed, in two different ways. Either they are allowed to observe the regimen of the treatment once a year (three or four

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weeks almost always suffice) until the additional growth of the year has been removed. It is still better if such a supplementary treatment is begun as soon as the weight has increased two or three kilogrammes. Then only two weeks are needed to restore the proper balance.

The second method to observe is a strict *treatment regimen* on a certain day of every week. This makes 52 treatment days in the year, hence more than 7 weeks of treatment. A man must indeed be a bad gourmandizer not to keep his weight at the same figure in this way.

Whoever is satisfied to observe the fast day as a "milk day" is allowed to take one to two litres of milk as the only nutriment. Most men find the varied fare which my treatment regimen allows even for the single day less disagreeable, and quickly give up the milk days.

One thing more! Let every obese person early procure a reliable scales. The weight must always be kept in evidence. It must not occur that men put on fat because they were uncertain for some time as to their weight.

CHAPTER XXVI

A RELATION exists between the height and the weight of man. A tall man or woman will appear normal and well-proportioned at a certain weight, while a small person of the same weight looks enormously fat. And *vice versa*! A small woman weighing, for example, 55 Kg. will make a good model for a painter or sculptor, while a tall woman of the same weight would be considered only by very modern artists as a model for their creations, but by us physicians as the object of an energetic fattening treatment.

There is no doubt, no debate about these facts. I even believe that those glorifiers of the absence of flesh and fat, if they should find these conditions in their own wives or daughters, would not refuse their consent to a correction which would bring about a return to those dimensions which the rest of humanity considers normal.

All agree that a enormously fat person should be made slimmer, and a man who consists merely of skin and bones should

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be fattened. Only those cases give difficulty in which opinions as to their symmetry vary or can vary. But even in the case of those who are fat or thin beyond doubt, and about whose need of correction all agree, it is a question of determining the weight which is to form the final goal of the treatment.

The questions which we and those seeking help must answer are, therefore:

(1) Is this individual before us so heavy or light that an obesity or a fattening treatment is indicated?

(2) How many kilogrammes are to be removed or added?

It has already been said that the weight of man depends primarily upon his stature. This opinion is also found in the literature of the subject. But there is also a long series of investigations by Quetelet¹ which has for its subject the dependence of weight upon age. Such determinations are important for the period of growth and development, but practically worthless for later life.

The same author² has also undertaken

¹ Quetelet, *Anthropometrie*, p. 346, cited according to Vierordt's data and tables, 2nd edition.

² Quetelet, *Physique sociale*.

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statistical inquiries as to the relation of height and weight, and thus established the following figures:

Height in centimetres.	Weight in kilogrammes.	
	Men.	Women.
140	34.48	37.18
150	46.29	48.00
160	57.15	56.73
170	63.28	65.20

Krause³ computes 2.9 cm. (!) increase in height for 1 Kg. increase in weight in proportionate bodies. This doubtless false assumption is based upon the measuring and weighing of the corpses of suicides. The number of observations was small and gave rise to the false conclusions.

A fairly well-known rule, attributed to Allaire and Robert, requires that one must weigh as many kilogrammes as one exceeds 100 cm. in height. Hence:

50 Kg. for 150 cm. height.

60 Kg. for 160 cm. height.

70 Kg. for 170 cm. height., etc.

Bernhardt⁴ has proposed the follow-

³ Krause, *Anatomie*, 3rd edit., vol. 2, p. 11 and 949 ff.

⁴ Borchardt, *Petersburger med. Wochenschr.*, 1886, p. 108.

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ing formula for the determination of the correct weight:

$$P \frac{H \cdot C}{240},$$

in which P signifies the weight in kilogrammes, H the height in centimetres, and C the average chest measurement taken over the nipples, in centimetres.

Fröhlich⁵ finds fault with this rightly, and emphasizes the fact that three quantities, length, breadth, and depth, should be employed, for weight is a cubical conception and therefore to be computed from three quantities.

As we will see, the core of the matter is thus reached, and it would have needed only one more calculation to solve the problem.

Dr. R. Livi⁶ employs a somewhat complicated reckoning in order to ascertain the relation between height and weight. He ascertains the "indice pondéral" by determining (according to a report in Schmidt's Year Books) "the relation of

⁵ Fröhlich, Eulenburg's Realencyklopädie, 2nd edit., article "Bodyweight," in the Allg. med. Centralzeitung, 1894, Nr. 103, and 1895, Nr. 1-3.

⁶ R. Livi, L'indice pondéral, Archive ital. de Biologie, cited according to Schmidt's Year Book, vol. 266.

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the hundred-fold radius of a cylinder (whose height would be equal to the height of the individual and whose volume would be equal to a volume of water of his weight) to his height."

Livi also objects energetically to all attempts to place height and weight in direct proportion, because it is false to place a cubic mass parallel to a height mass.

E. Schmidt⁷ has determined for the school children of Freiburg that the weight up to the age of 11 is almost in quadratic relation to the height, but later increases at a comparatively quicker rate.

As a matter of fact, it is clear to every one endowed with a little mathematical sense that the weights of bodies which must be *geometrically similar* to one another cannot be computed according to a formula in which only the first power of a dimension or, as Bernhardt claims, the product of the two linear dimensions are contained.

But, first of all, I would like to express my conviction that the statistical method,

⁷ E. Schmidt, Korrespondenzenblatt der deutschen anthropol. Ges., 1892.

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the determination of the average values of different individuals, should not be used in order to find the measure with which the others are to be measured. There may occur so many deviations from the norm according to the material which is at the disposal of the measurer, which tend *in the same direction*, that entirely false results could come to light.

The "too heavy ones" and the "too light ones" are both abnormal, and it is wholly improbable that they are mixed in the correct relation so that we would be able to construct from their average the man of ideal stature.

This also explains the fact that the values determined by various authors differ very greatly.

Only one solution of the problem seems to me justified. Artists or other men endowed with artistic sense would have to select from a great number of well-formed, unclothed persons the handsomest man and the handsomest woman. These two individuals would then be measured and weighed, and the values found used as the norm and measure.

According to my recollection, there have

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actually been such men's beauty contests dealing with the structure of the body.

We might also declare two creations of a great sculptor, man and woman, as the normal man and woman, and use them for our purposes.

They would have to be erect, naked figures. Good copies of plaster, with no hollow space in the centre, would have to be prepared, while pedestals, accessories, etc., and hair adornments would be removed. Then the figure would be weighed and its volume determined by comparing the weight with the specific weight of the material. The specific weight of man is known. It varies in healthy individuals with the normal nutritive condition within certain narrow limits. Hence nothing is easier than to ascertain how heavy, for example, the Apollo of Belvedere would be in flesh and blood.

Nor would it be difficult to determine his correct height, although he does not assume the attitude of the recruit under measurement. A well-proportioned man is made to assume the position of Apollo, and the vertical distance from top to toe is measured. Then he is placed upright,

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and it is ascertained by what per cent. his height has increased. The height of the Apollo would have to be corrected in the same ratio, in order to learn its "measure of ascent."

It would not be at all necessary to select a copy in natural size for this experiment. Copies on a small scale would suffice. We would have only to ascertain the formula by which we can convert the weight.

We can arrive at this formula empirically or by a simple mathematical calculation: empirically, by comparing the weights of *two copies of the same object differing in height*. If we take, for example, a statuette 10 cm. in height and another one 20 cm. in height, we find the latter *eight times* as heavy as the former. Hence the weights are to each other as the *third powers* of the heights. This can be developed mathematically as follows:

If P, P' be the weights, V, V' the volumes of two similiarly built, hence geometrically similar, figures with the heights h, h' and the greatest breadths, measured perpendicular to the line of height, b, b' , then we have first—(by s is

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understood the *average* absolute weight of every unit of volume) :

$$P = V_s, \quad P' = V'_s$$

$$(1) \dots\dots\dots \frac{P}{P'} = \frac{V_s}{V'_s} = \frac{V}{V'}$$

$$(2) \dots\dots\dots \frac{b}{b'} = \frac{h}{h'}$$

At the same time, by virtue of the geometrical similarity of both individuals, the relation of V (the volume) is to $\frac{1}{4} b^2 \pi h$ of a circular cylinder of equal height h and diameter b as the relation of V' (the volume) is to $\frac{1}{4} b'^2 \pi h'$ of the corresponding circular cylinder with the height h' and diameter b' ; that is:

$$V : \frac{1}{4} b^2 \pi h = V' : \frac{1}{4} b'^2 \pi h'$$

Thereupon it follows $V : V' = b^2 h : b'^2 h'$, hence with reference to (2)

$$(3) \dots\dots\dots \frac{V}{V'} = \left(\frac{b}{b'}\right)^2 \frac{h}{h'} = \left(\frac{h}{h'}\right)^2 \frac{h}{h'} = \frac{h^3}{h'^3}$$

so that according to (1) we have also finally

$$(4) \dots\dots\dots \frac{P}{P'} = \frac{h^3}{h'^3}$$

Hence the *weights are to each other as the third powers of the heights*. In this connection it is a matter of no importance

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according to what units of measure P , P' : h , h' have been determined, because these units of measure fall out when P is divided by P' and h by h' .

Individuals of the most different heights can correspond to the ideal set up by us, if the proportions of their bodies are like those of the ideal man, if they are geometrically similar to the latter.

As already mentioned, we can regard the specific weight of healthy, normal men as constant. *Hence the weights of men who are geometrically similar to one another are proportional to the third power of their heights.*

It is very important that the breadth and thickness of the body are *not* contained in the formula which we use. For these dimensions change with the nutritive condition (the height does not!). Hence if breadth and thickness were present as factors, as in the formula of Bernhardt, we would learn at *most*, after measuring an obese person, how heavy he is (but the scales tell us this more reliably), but not how heavy he ought to be, as we wish to know.

The experience which I have had with

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2000 men coincides perfectly with the rule. If we consider a man symmetrical, who is 170 cm. tall and who weights 70 Kg., this is also the case with a man 160 cm. tall, weighing 58.4 Kg., while a man 190 cm. tall must weigh 97.70 Kg.

Now, we must still agree as to the masculine and feminine ideal which is to form the basis of our computation.

Since we do not exactly wish to make our patients models for Greek gods, we need not be too severe. The norm of weight is not a definite figure in every case; it lies within two bounding values which differ by some kilogrammes.

Aside from the height of the body, there still remain different factors which influence the weight and which must be taken into consideration in estimating deviations from the norm.

The age is such a factor; Quetelet found, as already mentioned, by a statistical method, that men become lighter with increasing age. The observation of the members of a large class who do not live in poverty (so far as I can judge, of all nations) teaches the contrary. It is seen that the majority of individuals be-

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ginning with the 25th year put on fat, and there is no doubt that the average weight of men who are regarded as normal (hence, after separation of the invalids and obese) rises with increasing age (from the 20th to the 60th year of life).

The fifties of the woman, the time of the climacteric, would in that connection correspond to an upward break in the weight curve. As already mentioned, this time is also critical for the shape of the body. The powerful influence of the generative glands upon tissue-change is thus expressed.

Hence we will estimate the "permissible" weight higher for an obese elderly man than in the case of a young one of the same height. I consider a "quinquennial addition" of 1 Kg., reckoned from the 25th year, to be correct.

The circumstances are different in the case of candidates for fattening treatments. We are seldom confronted by the necessity of attempting such treatments in the case of old people, still less of carrying them out successfully.

Hence it is of no urgent practical inter-

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est to know whether the weight of an old person has gone below the permitted minimum. At any rate, it can be considered well established that a somewhat too low weight is no indication for a fattening treatment after the age of 50.

A second factor which deserves attention and consideration is the oft-present disproportion between limbs and body. There are obese people (not seldom among women) whose "ballast" weight has been added exclusively to the body, while arms and legs are slender and well formed. The weight of such people is easily overestimated, if they are not seen undressed. Since with them the fat is concentrated in single places, the cosmetic effect of an obesity treatment will only be fully recognized when the weight has been reduced to a value very close to the norm. In the case of the symmetrical distribution of fat on body and limbs, or in the case of excessive participation of the latter in obesity, and especially in the case of powerful development of the bony system—large hands and feet—the permissible weight is to be estimated higher than in the case of men with delicate limbs.

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Above all, attention must be given to the development of the muscular system.

According to Vierordt (*loc. cit.*), the muscular system of an adult male amounts to no less than 43.40 per cent. of his total weight.

Krause (*loc. cit.*) found in the case of a suicide weighing 69.7 Kg. that the muscles weighed 29.1 Kg. = 41.8 per cent., in the case of a woman weighing 55.4 Kg. that the muscles weighed 19.8 Kg. = 35.8 per cent.

The lowest figure ascertained in the case of an adult female (by Dursy) amounted to 14.7 Kg., the highest (by Bischoff) in the case of a man 30.6 Kg. But these figures certainly do not represent the extreme values. They teach us that we have to take into account as muscles several kilogrammes of the excess weight found (more exact directions are not necessary) when the muscular system is unusually developed.

The more powerful development of the muscular system of man is also the most important cause for the greater weight of man as compared with that of woman of the same stature. The more powerful

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bony system is the second factor. The weight of the skeleton amounts to 17.5 per cent. (Vierordt), hence only two-fifths of the muscle weight, and the differences of the weight of the skeleton in different individuals are much less than those of the weight of the muscles.

The following tables are constructed on the supposition that a well-proportioned man, 25 years old, with a well-developed muscular system and 170 cm. in height, ought not to weigh more than 70 Kg., and that a well-proportioned woman, 25 years old and 165 cm. in height, not more than 60 Kg.

I hope that this assumption, which is arbitrary, but is advanced on the basis of numerous observations, will be accepted. Then the table would give immediate information as to how heavy men and women of varying stature ought to be, may be.

But if anyone should wish to take other normal values for the man 170 cm. tall and for the woman 165 cm. tall as a starting point, he will not find difficulty in computing himself, with the aid of the formula developed above, the appropriate figures for the other height values.

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The figures refer to undressed individuals. The clothing of men (without outside wraps) generally weighs in summer between 3 and 4 Kg., in winter 4 to 5 Kg.; that of women, 2 to 3 and 3 to 4 Kg., respectively.

Height, cm.	Weight, Kg.		Height, cm.	Weight, Kg.	
	Men.	Women.		Men.	Women.
145	....	40.7	173	73.8	69.2
146	....	41.5	174	75.1	70.4
147	....	42.4	175	76.4	71.6
148	....	43.3	176	77.7	72.8
149	....	44.2	177	79.0	74.0
150	48.1	45.1	178	80.3	75.3
151	49.0	46.0	179	81.7	76.6
152	50.0	46.9	180	83.1	77.9
153	51.0	47.8	181	85.5	79.2
154	52.0	48.8	182	85.9	80.5
155	53.0	49.8	183	87.3	81.8
156	54.0	50.8	184	88.7	83.2
157	55.1	51.8	185	90.1	84.6
158	56.2	52.8	186	91.6	86.0
159	57.3	53.8	187	93.1	87.4
160	58.4	54.8	188	94.6	88.8
161	59.5	55.8	189	96.1	90.2
162	60.6	56.8	190	97.7	91.6
163	61.7	57.8	191	99.3	93.1
164	62.8	58.9	192	100.9	94.6
165	64.0	60.0	193	102.5	96.1
166	65.2	61.1	194	104.1	97.6
167	66.4	62.2	195	105.7	99.1
168	67.6	63.3	196	107.3	
169	68.8	64.4	197	108.9	
170	70.0	65.6	198	110.5	
171	71.2	66.8	199	112.2	
172	72.5	68.0	200	113.9	

APPENDIX

FATTENING TREATMENT

THE treatment of abnormal leanness (fattening treatment) is the opposite of the treatment of obesity, its purpose being to remove a defect in the fatty content, and, as a rule, in the muscular content of the organism.

We must understand in the beginning that, in general, it is more difficult to succeed in the fattening treatment than in the treatment of obesity. In the latter condition treatment is successful *always* and *without exception*, unless obstinacy or deficient strength of character in the patient brings our endeavors to naught. Fattening treatments, on the contrary, can be wrecked on various cliffs. Their success presupposes a certain degree of functional soundness on the part of all organs that serve in the assimilation of nutriment. A man who suffers from cancer of the stomach, or from some other severe gastric or intestinal affection, cannot usually be fattened. And there are

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other affections, especially those accompanied by fever, and, above all, tuberculosis, as well as many abnormalities in tissue-change, which oppose great and sometimes insuperable obstacles in the way of attempts to increase weight.

Hence, it is plain that the prospect of success in any fattening treatment will vary according to the cause of the undernourishment. A good prognosis can be made in those cases in which there is no doubt that the cause is to be found in insufficient or irrational feeding; and this, whether the patients have restricted the amount of their food from a morbid fear of obesity, or whether their loss of appetite is a result of sorrows or cares. ("Love-sorrow" is a frequent source of morbid leanness.) In these cases the patient takes but small quantities of food, and these with reluctance, the entire amount being insufficient to maintain his nutritional equilibrium.

These latter forms of undernourishment undergo spontaneous cure as soon as the cause is removed. It is universally known that a change of residence or of surroundings, or a pleasure-trip has a favorable

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effect upon the mental condition of the patient and indirectly upon his nutrition. But even in these cases definitely formulated directions as to the kind and quantity of the food to be taken are of value.

Then, too, there are cases of morbid leanness (to which reference has been made in another connection) which seem paradoxical. The patients, usually girls or young women, are not seriously sick—at least, so far as this can be determined during life by present-day methods. They have no great sorrow or care, except that they wish to put on flesh. Acting of their own accord or upon the advice of physicians or friends, they have tried, often for years, the means available to them for the removal of their burden. They eat as much as they can hold, and usually more than their healthy and normal looking brothers, sisters, and friends of the same age. They are large consumers of the various concentrated or predigested forms of nutriment. Close observation shows that at times digestive abnormalities, usually trifling, are present. The appetite leaves much to be desired. Eructations, heart-burn, and a feeling of disten-

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tion are present after meals, and the bowels are usually irregular. A "sensitive stomach" is found with especial frequency. Lauder Brunton compares the stomach of a certain fortunate class of men to a Wedgewood mortar, which can be hurled violently to the ground or belabored with a hammer and yet remain whole and uninjured. On the other hand, there are men whose stomachs resemble a vessel of thinnest porcelain. Gently handled, it remains sound and uninjured up to a great age. But every inconsiderate or slight blow may shatter it in pieces. Such fragile stomachs are not infrequently found in the case of those with whom we are now concerned. A somewhat too rich or too abundant meal, the use of certain kinds of food, even in the smallest quantity, causes vomiting or, at least, loss of appetite for days, or some other disturbance, and considerably reduces the body weight, which by laborious effort had been increased a little.

That an increased diet leads to the addition of fat is known to every child. When a man is too lean and feels that his condition is unpleasant, ugly, or dangerous to

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health, he will try to eat more than has been his custom. And if he does not do this of his own accord, he will be urged to do it by those about him.

It is also true that among educated people correct conceptions as to the value of different foods as fat-builders are the rule. It is generally known that fats and carbohydrates occupy the first place; that butter, cream, and farinaceous foods are very useful in causing an increase of fat, and that, on the contrary, other foods and food constituents exhibit little nutritive value and should not be allowed to usurp the limited space in the stomach, needed for more nutritious articles of diet.

All this is well known and heeded, whether medical advice is sought or not, and yet there are countless failures. The poor victims go to no end of trouble and yet remain thin and lean.

I have given advice to quite a number of cases (about 100) belonging in this category, and in about 75 per cent. of them have secured marked and lasting success.

The history of the cases with favorable outcome showed without exception that

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the patients had (before coming to me) eaten enough food. If this food had been really digested and assimilated, a rapid accumulation of fat would inevitably have followed. It did not appear, however. Hence it seems clear that the food was not, or not entirely, assimilated. Closer investigation never failed to show that the digestive disturbances mentioned above were present. Absent or insufficient appetite was almost always noted. With these patients eating is usually accompanied by a feeling of disgust rather than pleasure. And this the more if they are required to consume nourishing but disagreeable foods.

With reference to Pawlow's investigations regarding the influence of the sense impressions (smell, appearance of the food, and its palatability or non-palatability) upon the secretion of the digestive juices, the disregard of the wishes and tastes of the individual patient must be regarded as a gross error. *I have sought to avoid this by never forcing my patients to take food or drink which was repugnant to them.* It is necessary to find dishes or methods of preparation that are

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agreeable or, at least, not repugnant to the patient.

In this connection the inclination of many patients to eat bread, possibly even to eat certain kinds of bread, often stood me in good stead. They are generally very glad to eat bread and butter.

If beef is refused, then ham, poultry, fish, possibly even eggs or cheese, and potcheese should be tried as a substitute. An expedient can always be found if one takes the trouble to seek it.

Tasteful preparation (best butter as cooking fat) is very essential. Then, too, one should not forget that, given the same constituents, a much more palatable dish can be prepared by a good cook than by one less gifted.

But the most important thing is not to give more nutriment than the organism of the patient can easily digest and assimilate. More than this does no good, but, on the contrary, does harm: on the one hand, because it overburdens the digestive organs and causes decomposition processes, which can lead to toxæmias and occasional digestive disturbances; and, on the other hand, because so much chemical energy is re-

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quired for disposing of this excess that no real additions of material can follow. Both circumstances combine to hinder the gain in weight.

In the case of men who were large eaters and yet remained pathologically lean I succeeded by limiting the nutriment.

As in the case of the reduction treatment, the fact that I was not obliged to complete the cure in an allotted time, but could take as much time as I chose, was of great advantage. The patients, for the most part, remained in their accustomed environment. Only when the disturbing psychical influences mentioned above could be demonstrated was institutional treatment, or at least a change of environment, undertaken.

The treatment is begun by placing the patient upon a diet containing approximately sufficient nourishment to maintain his present status.

In the choice of foods we are guided, on the one hand, by the tastes of the patient (when these are not entirely unreasonable), and, on the other hand, by the condition of the digestive organs. In some cases coarse food is prescribed, in

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others food that is more delicate and more easily digested. *All dishes are weighed.*

The methods (cited in Chapter XII) which serve to increase pleasurable sensations in eating are employed. The insertion of a mouthful of bread between several mouthfuls of meat, and of a drink of water or milk between the single courses, but especially the alternation in the fare, contribute to free the treatment from everything which is felt as disagreeable compulsion.

When familiarity with the nutritive requirements of the patient has been gained by several days of normal diet, the food is slowly and cautiously increased and the body weight is recorded. The latter, for reasons already stated, has decreased somewhat in the first few days. The stomach and intestinal contents have become lighter as a result of the restriction in diet, and there has been a corresponding reduction of the total weight.

But now the latter begins to mount. The rate of increase is of very little moment in these cases. The steadiness of the increase and, above all, the health of

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the patient are the important considerations. I am well satisfied with weekly increases of 0.50 Kg. or even 0.25 Kg. I consider it advisable to exceed 1 Kg. a week only when the patient desires more abundant fare, as occasionally happens in the course of the treatment.

Even in the days of normal diet, the little troubles about which the patient at first complained—flatulence, feeling of tension in the stomach, heart-burn, and inclination to diarrhoea—disappear. These disturbances should not appear again during the treatment. If they do, it is evidence that a reduction in quantity or a change in quality of the diet is indicated.

For the delicate balancing of the nutritive value of the entire diet, nothing is better than milk, in combination with tea, cocoa, coffee, oatmeal, or even the “puffed” foods which serve as infant foods, *e.g.*, Kufeke’s Infant Food.

There are men with whom ordinary milk does not agree, but who can easily digest the “*Fettmilch*” which I discovered, a milk poor in casein, but rich in fat, more like mother’s milk in com-

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position, and forming soft curds in the stomach.

I prefer to have sweet milk or "*Fettmilch*," cold or warm, taken at the principal meals instead of other liquid. As is well known, it is best borne when taken in this way. I also often use the Bulgarian sour milk (Yogurth).

I do not think it advisable to give milk except with meals. This would really be to increase the number of meals and thereby to deprive the stomach of its needed intervals of rest. Milk in itself constitutes a meal and imposes upon the digestive organs demands which should not be underestimated. We know that nursing infants usually thrive better if the number of their meals is restricted. The same rule serves for those adults whose stomachs will not bear comparison with a Wedgewood mortar.

Patients who have submitted to an enforced fattening cure in institutions relapse easily into their former mode of life when they return home. To continue to nourish them as during the period of treatment seems hardly possible. Those patients, on the contrary, who were over-

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nourished under my direction without being forced to take certain dishes or great quantities of food are able, if necessary, to continue the new diet for an unlimited time.

Adults who refuse milk and have an urgent desire for a glass of beer may be allowed a small quantity of a liquid extract of malt. Otherwise I prefer to get along without alcohol in the fattening treatment. To give alcohol regularly, even in the smallest quantity, to children and young people is, in my opinion, criminal.

The few examples that follow will serve to illustrate my method of procedure.

No. XIV, 24, the 26-year-old wife of an attorney (who was at the same time taking an obesity treatment), married for 7 years, mother of two children, aged 6 and 4 years. The patient is 170 cm. tall. When she was married she weighed 64.5 Kg., and wishes most anxiously to attain this weight again. Looks pale, has no appetite. Menses accompanied by great loss of blood. Poor sleep. Otherwise no complaints. In the endeavor to put on fat she has observed the following rich diet:

Morning: Cocoa, two rolls, butter.

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Ten o'clock: One-quarter of a litre of milk, bread and butter, fruit.

Noon: Soup, roast, vegetables, potatoes with sauce, farinaceous food, three-tenths litre milk, bread.

Four o'clock: Coffee, one buttered roll.

Evening: Meat, vegetables, preserves, fruit, three-tenths litre milk, bread.

Ten P.M.: Three-tenths litre milk.

The patient is a total abstainer.

Diet of treatment:

Morning: 200 Gm. of coffee or cocoa with cream, 80 Gm. of rolls with butter. Later, also one egg, at the request of the patient.

Noon: 150 Gm. of beef soup with solid constituents, 100 Gm. of beef or roast, 100 Gm. of green vegetables or potatoes and sauce, 120 Gm. (increased to 160 Gm.) of farinaceous food and bread (taken together), 20 Gm. of cheese, 150 Gm. of fruit, one cup of Mocha, water as a drink.

Five o'clock: 150 Gm. of coffee with cream, 40 Gm. of buttered rolls.

Evening: 100 Gm. (later 110 Gm.) of any roast or fish or cold meat, 120 Gm. (increased to 180 Gm.) of potatoes or noodles, macaroni, etc., as a side dish; also lettuce or preserves as desired, one buttered roll, water as a drink.

Hence two meals or milk were omitted. The amount of food allowed was, however, otherwise

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decidedly smaller than that before the beginning of the treatment.

The following table gives information concerning the progress of the treatment:

Date.	Weight with clothes.	Remarks.
September 18, 1905....	60.30	Beginning of treatment.
September 25.....	59.70	Initial fall in weight.
October 2.....	60.00	Mental excitement. Death in family.
October 9.....	60.95	Appearance better. Ap- petite good.
October 16.....	61.10	Menses.
October 23.....	62.50	Perfect health.
October 30.....	62.80	
November 6.....	63.30	
November 20.....	63.55	Menses passed. Perfect health. Good appear- ance.

According to reports of the husband, the weight rose still higher. The patient bore a third child, which she nursed herself. During this time her weight increased still more. The lady adheres firmly to the principle of the diet which I prescribed, and enjoys a normal nutritive condition and perfect health.

No. VI, 15, the 23-year-old vocal student, now an opera singer, is 167.5 cm. in height, and on the day when she began the treatment, February 9, 1905, weighed 57.10 kilos. (with clothing). She has endeavored for a long time to im-

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prove her nutritive condition by heavy eating. Without success! Appetite varying. Bowels regular. Formerly constipated. Menses very irregular, the last time five months ago. The following treatment regimen represents a restriction in diet compared to her previous diet:

Morning: 200 Gm. of coffee with cream, one buttered roll, 30 Gm. of ham, or one egg.

Noon: 200 Gm. beef soup with solid constituents, 100 Gm. of beef or roast, 150 Gm. vegetables, also sauce and potatoes; 150 Gm. of salted or 80 Gm. of sweet farinaceous food.

Added later, a half litre of milk with meals.

Five o'clock: 200 Gm. of coffee or cocoa, one buttered roll.

Evening: 130 Gm. of roast or 100 Gm. of cold meat, or three eggs; 150 Gm. of potatoes or 120 Gm. of noodles, macaroni, etc.; 40 Gm. of black bread, 100 Gm. of fruit.

PROGRESS OF TREATMENT (in Abstract).

Date.	Weight with clothes.	Remarks.
January 26, 1905.....	57.10	Beginning of treatment.
February 8.....	55.80	Initial fall in weight. Euphoria.
March 18.....	57.60	Good appetite. Euphoria.
April 10.....	58.75	Good appetite. Euphoria.
May 13.....	60.55	Good appetite. Euphoria.
June 30.....	61.00	Good appetite. Euphoria.

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With that the treatment is ended. The patient, however, follows the direction given in substance even longer. Her weight rises still more. On September 25, 1907, it amounts to 64.70 kilos.; on February 15, 1908, to 64.90 kilos.; on April 24, 1908, to 65.70 kilos., and on September 28, 1912, to 70.80 kilos. Menses in fairly good shape for years.

No. XXXI, 7, the 22-year-old single lady, was never seriously sick. On February 3, 1908, she weighed 51.80 kilos. in her clothes, height 171 cm. As long as she can remember she has always been too thin. Small bones, weak muscles. Pale appearance. Organs without pathological findings. Appetite leaves much to be desired. Pressure in the region of the stomach after abundant meals. Tendency to diarrhœa. Looseness always appears after excitement of any kind. Menses regular since 13th year. Different attempts to increase her weight fail. Sleep 11 hours. Little exercise.

Regimen of treatment.

Morning: 250 Gm. of cocoa with cream containing 6 per cent. fat, 50 Gm. of buttered rolls.

Noon: 150 Gm. of any soup, 90 Gm. of roast or beef, 100 Gm. of vegetables, also potatoes or leguminous vegetables in purée form; 140

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Gm. of farinaceous food, especially salted (in exceptional cases also sweet), (of these only 100 Gm); 20 Gm. of bread, three-tenths of a litre (later one-half litre) of boiled cold milk.

Five o'clock: One-quarter of a litre of yoghurt (later 200 Gm. of coffee with cream) and 50 Gm. of buttered rolls.

Evening: 70 Gm. of ham or other cold meat and 50 Gm. of buttered rolls, or 100 Gm. of warm roast and 150 Gm. of potatoes or 100 Gm. of rice or noodles, etc., daily, at the urgent wish of the patient, one-half litre of pasteurized Spatenbräu beer. Patient is convinced that she ate more before than during the treatment.

PROGRESS OF THE TREATMENT.

Date.	Weight with clothes.	Remarks.
February 3, 1908.....	51.80	Beginning of treatment.
February 11.....	53.00	Menses on February 10th. Normal movements of bowels since beginning treatment.
February 18.....	54.60	Bowels normal. Diarrhoea only once after dietetic error.
February 25.....	55.30	Euphoria. Better appear- ance. Bowels normal.
March 3.....	55.40	Euphoria.
March 10.....	56.55	Menses on March 9th.
March 17.....	56.65	Euphoria.
March 24.....	56.85	Euphoria.
March 31.....	57.00	Euphoria. Weighed in somewhat lighter cloth- ing.

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Patient appears to be in blooming health. Consumes her meals with good appetite, and no longer feels pressure in the stomach. Bowels normal for many weeks.

The mode of nutrition is retained in substance. On August 27 I saw the patient again for the last time. Her weight amounted to 57 Kg.

No. 1, 26, the 30-year-old childless wife, is 168 cm. tall and weighed at the beginning of the treatment on February 15, 1904, 55.30 Kg. in her clothes. Too lean since childhood. Eats as much as possible. No appetite. Bowels and menses regular. Regimen of treatment:

Morning: 250 Gm. of malt cocoa, 60 Gm. of buttered rolls, two yolks of eggs.

Noon: 100 Gm. of concentrated beef soup, 100 Gm. of roast, 100 Gm. of potato purée or spinach or boiled lettuce, 150 Gm. of "salted" farinaceous foods, 80 Gm. of preserves, one glass of water.

Five o'clock: 200 Gm. of weak coffee with milk, and one buttered roll.

Evening: 100 Gm. of cold meat and one buttered roll, one glass of wine, and one glass of water.

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PROGRESS OF TREATMENT (in Abstract).

Date.	Weight with clothes.	Remarks.
February 15, 1904. . . .	55.30	Beginning of treatment.
March 1.	56.00	Euphoria. Appetite excellent.
April 25.	57.60	Euphoria. Appetite excellent.
December 7.	60.00	Euphoria. Appetite excellent. End of treatment.
February 22, 1905. . . .	62.20	Patient always eats according to the scales. Feels perfectly well and looks blooming.
April 1, 1912.	63.00	After eight years patient presents herself again. The success of the treatment, as can be seen, is permanent.

No. XXIII, 28, the 24-year-old opera singer, was never seriously sick. A month ago influenza, with slight fever of short duration. First menses at the age of 13, then menopause, lasting a year, caused by chlorosis; since then menses again regular. Violent migraine once or twice a month "from the stomach." No appetite. Many dishes, for example sausage, do not agree with her. Bowels constipated. Little exercise.

Has always been too lean since childhood. Attempts to put on fat and flesh by large eating and frequent meals without success.

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Weight in clothes on June 22, 1906, 51.60 Kg., with a height of 166 cm. I prescribed the following diet, which represents a restriction compared with the one accustomed:

Morning: 200 Gm. of coffee with cream, one buttered roll.

Noon: 150 Gm. of soup with solid constituents, 110 Gm. of roast, 150 Gm. of vegetables, 120 Gm. of farinaceous food, 25 Gm. of bread, 200 Gm. of fresh fruit or preserves, one-half litre of milk.

Five o'clock: 200 Gm. of coffee with cream, one buttered roll.

Evening: 120 Gm. of roast, 150 Gm. of potatoes, rice, macaroni, etc., 20 Gm. of bread; also lettuce and cucumbers as preferred, one-half litre of milk.

Three months later, on September 19th, the weight was 59.30 Kg., hence 7.70 Kg. higher than at the beginning of the treatment. Migraine extremely seldom. Appetite excellent. Bowels in order. The success remained permanent.

No. XXVI, 15, the 18-year-old clerk, survived a catarrh of the apex pulmonis. At that time had a fever for four weeks. Now neither coughing nor other symptoms exist. Menses regular since the age of 16. Patient complains

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of lack of appetite, is a light eater. Digestion in order. Every day she takes a walk of an hour. Sleeps 11 hours. Has always been too lean.

The former diet consisted of five meals. Apparently no change has been made in the diet, except that the patient's food is regulated by the scales. The weight rises from 49.30 Kg., on the day when the treatment was begun, gradually to 55.65 Kg. in the course of four months, and it remains permanently at the latter figure. At the same time the patient feels very well and eats her meals with a good appetite.

CONCLUSION

I TAKE the position of those who assume that very many consume more nourishment than they should. Many of these go unpunished.

According to individual disposition, overeating leads in some cases to obesity, in others to digestive disturbances. Pyrosis and vomiting are frequent results of immoderate eating. Pyrosis is also an accompaniment of obesity. Overeating often causes (by producing obesity) an increase of the blood-pressure.

Weighing the food facilitates its division according to the particular end in view (reduction, fattening, or normal diet). It aids in the conduct of all rational dietetic treatment.

The incidental uniformity of diet is often beneficial to sufferers from migraine, reducing the frequency and severity of the attacks.



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